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No. 2.—CLINICAL DIAGNOSIS OF DISEASES OF THE ABDOMEN OF THE DOG AND CAT *

BY

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For the discussion of this paper on Tuesday, September 5th, 1950, there was again an excellent attendance, in which women members were very well represented, at the Cardiff Technical College. The chair was occupied by Mr. S. F. J. Hodgman, M.R.C.V.S., President-Elect of the Association.

The CHAIRMAN: We are having a paper this morning on the Clinical Diagnosis of the Diseases of the Abdomen of the Dog and Cat. I have asked Mr. Lauder to shorten his remarks as much as possible, the paper having been circulated, and I am going to ask the openers, Miss James and Mr. Heney, to confine their remarks to about 15 minutes. This will enable us to have a more general discussion.

Mr. LAUDER: I would first like to thank the Provisional Committee of the N.V.M.A. for the honour of inviting me to present this paper, particularly as it is the only small-animal paper to be given at this Congress. I would apologise for the paper becoming rather a catalogue, but owing to the wide field of interest and the limited space available to me, it was the simplest way of covering a complicated subject. I have endeavoured to enliven the monotony by including sections on radiology, illustrated by the X-ray plates on view depicting the use of various opaque media in normal animals.

I have classified according to their systems the more common conditions met with in the abdomen and dealt with them somewhat briefly. One realises only too well that a great many of the more obscure conditions have been omitted, and, no doubt, I will have my attention drawn to this later in the discussion.

In dealing with a paper of this nature it is a comparatively easy matter to enumerate a list of clinical signs and symptoms and methods of diagnosis of the various diseases of the abdomen, but the actual diagnosis in practice is another matter, one condition frequently becoming merged into another. An example of this is vomiting. Vomiting is one of the commonest symptoms of abdominal disease and is very often the only history obtainable from the owner. After closer clinical examination, however, some other symptom is invariably present, and upon the combination of these depends one's diagnosis. On the other hand, one should not be tempted to jump to conclusions because the patient is exhibiting a series of obvious symptoms. One example of this that comes readily to mind was a bull mastiff bitch that was showing every symptom of advanced pregnancy—enlarged abdomen, swelling of the vulva, and production of milk. However, on radiographic examination there was no evidence of foetuses nor were they palpatable. I made a tentative diagnosis of abdominal tumour, and advised an exploratory laparotomy. On opening the abdominal wall I discovered that the large mass was an extensive tumour which on macroscopic examination appeared to be an encapsulated blood tumour arising from the uterus. How it occurred, why it produced secondary signs of pregnancy, I am afraid I do not know. With the owner's consent I destroyed the bitch. I discovered afterwards that the bitch had been examined by another veterinary surgeon, who diagnosed advanced pregnancy.

On reviewing my paper after it was written I realised that I had omitted a large number of conditions present in the abdomen, but this was inevitable. However, there are two items that I feel I must add. If I had made any further additions to the paper, I would have had Mr. Brown on my track, as I had already exceeded my quota.

The first condition that I wish to enlarge upon is jaundice. This is usually divided into three types:—

(*a*) Obstructive jaundice caused by such conditions as calculi, parasites, catarrh of the mucous membrane of the ducts, external pressure from neoplasms, etc.

(*b*) Toxic jaundice, due to infective and septicaemic conditions, such as leptospirosis.

(*c*) Haemolytic jaundice, brought about by excessive haemolysis of the R.B.C.s, as, for example, in piroplasmosis.

The diagnosis of toxic jaundice caused by the leptospiral organism can be aided by the demonstration of the parasite by dark ground illumination.

Whether more use could be made of radio opaque material in the diagnosis of obstructive jaundice I am not sure. I have seen very little reference to its use in veterinary literature, and yet most of the early experiments in human cholecystography were performed in dogs. Glenn Jones and his colleagues have described a series of experiments in the use of iodine compounds as cholecystographic agents. In their opinion the most rapid and complete delineation of the ducts and gall bladder was obtained by the intravenous use of the diiodobenzyl benzoic acid. Up to now my experience has been limited to the use of the iodophthalein compounds, such as the M & B products, Pheniodal and Opacin, with which I have not yet had much success.

Finally, the only other conditions I would like to add further comments on are those of the bladder. A very common clinical sign is the presence of blood in the urine and I regard the position of this blood during the act of urination to be of some significance in making a differential diagnosis. In other words, the presence of blood uniformly mixed with the urine occurs in cases of cystitis, whereas blood passed at the end of urination is indicative of vesicular calculi.

I had intended including in the paper a few X-ray plates

* Presented to the 68th annual meeting of the National Veterinary Medical Association, at Cardiff, on September 5th, 1950.

illustrating the use of the various types of opaque material in normal animals, but the powers that be decided that they were not suitable for reproduction. However, Messrs. Newton Victor came to the rescue and very kindly loaned the illuminators in order that I could demonstrate the plates.

I trust the paper has proved interesting to you. Your criticisms and questions will be most welcome—I only hope I know the answers.

REFERENCE

JONES, GLENN E., *et al.* (1947.) "Iodinated Organic Compounds as Contrast Media for Radiographic Diagnoses." 33rd Annual Meeting Radiological Society of North America. Boston. November 30th to December 5th, 1947.

Mr. Lauder's paper was as follows:—

Clinical Diagnosis of Diseases of the Abdomen of the Dog and Cat

Diagnosis has been defined by Boddie as the art of recognising a disease and distinguishing it from other diseases. The first essential steps in dealing with any disease must be the establishment of a diagnosis, for the nature of treatment, control measures, and prophylaxis all depend upon the diagnosis.

On being presented with a patient for clinical examination the practitioner first must attempt to obtain from the owner as accurate a history of the case as possible; a general examination follows, and from these facts one usually gets a general impression as to which system is involved. A more detailed examination of that system is then carried out, by means of palpation, percussion, and auscultation. In some cases it may be necessary to resort to the passage of sounds, catheters, or exploratory puncture, while in others rectal, vaginal or radiological examinations may be necessary. The aid of laboratory methods may be needed to confirm a diagnosis, by the utilisation of urinary, faecal, or bacterial examinations.

Since the abdominal cavity contains such a vast number of organs with widely divergent functions, I propose to deal in this paper with the various abdominal conditions according to the different systems.

I. DIGESTIVE SYSTEM

(*a*) GASTRITIS. *Acute.*—The most prominent symptom is vomiting, which in a large number of cases can be very persistent. The appetite in mild cases is very variable and capricious, but in the more severe cases it is lost altogether. An exaggerated thirst invariably is present, and if the animal is allowed to drink copious amounts of water the vomition is aggravated. At first the vomit consists of fermenting and undigested foodstuffs frequently covered with mucus, but if vomiting persists the material consists of mucus mixed with blood and bile. On examination the patient shows pain on palpation over the stomach region. There is frequently a whitish grey deposit present on the tongue. In the severe cases the temperature may be elevated (103 to 105°), but in the later stages becomes subnormal (97 to 100°).

Chronic.—This is a condition that exists for an indefinite period, and is characterised by persistent vomiting and retching which is more particularly noticeable a short time after the ingestion of food. The vomit consists of undigested food mixed with thick tenacious mucus. Brumley states that a chemical analysis of the vomit shows the presence of abnormal acids, such as butyric and lactic, while hydrochloric acid is either absent or greatly reduced. As a result digestion is severely delayed, frequently constipation is present. The appetite is very variable—sometimes greatly impaired, and at others very good. The urine is reduced in amount and usually highly coloured with a disagreeable odour. The patient exhibits general symptoms of disturbed nutrition and emaciation.

Diagnosis.—This is based largely on the symptoms exhibited, but in the acute form the condition may be confused with specific infections, such as distemper. The general symptoms, however, will assist in the differential diagnosis.

(*b*) ULCERATION OF THE STOMACH.—Mild ulcerations of this organ very seldom are diagnosed during life, and I am convinced that the vast majority are diagnosed as acute gastritis. In the more advanced and persistent cases the symptoms closely resemble those of chronic gastritis, but may be distinguished by the frequency with which blood is contained in the vomit. If the ulcer perforates, the animal will show sudden intense pain, followed by collapse. The symptoms of acute peritonitis rapidly develop and a fatal termination follows.

Diagnosis.—An accurate diagnosis is an extremely difficult matter. When an ulceration is suspected a laparotomy can be performed, but even this, unless the ulceration is extensive, may not reveal much. Radiological examination may prove useful.

(*c*) FOREIGN BODIES IN THE STOMACH.—These may consist of a great variety of objects, and I am sure most practitioners must have a heterogeneous collection of foreign bodies removed from the stomach of the dog. In a large number of cases practically no symptoms are observed. I had one case of a collie swallowing a rubber ball about 6 inches in circumference, and the only symptoms present were spasmodic vomiting over a period of a month. Complete recovery occurred upon surgical removal. In other cases the foreign body produces extensive irritation of the mucous membrane of the stomach wall, or if the object is sharp, penetration of the wall. The most common symptoms seen are vomiting, thirst, loss of appetite, and pain on palpation of the stomach region.

Diagnosis.—This is based on the history of the case, but mainly on X-ray examination. Exploratory laparotomy, with direct palpation of the stomach, often will reveal the presence of the foreign body.

(*d*) DILATATION OF THE STOMACH. *Acute.*—Vomiting is one of the early symptoms and in most cases produces relief. The distension of the stomach with gaseous and fermenting material frequently causes a distressing dyspnoea, an accelerated pulse, and intense pain.

Chronic.—Symptoms exhibited are somewhat similar to those of chronic gastritis. Vomiting occurs, particularly if pyloric stenosis is present, shortly after feeding or drinking water. If stenosis is only partial a certain amount of food passes, and emaciation occurs slowly. Constipation is usually present. Palpation over the stomach region will reveal the enlarged organ, and percussion will produce a tympanitic sound.

Diagnosis.—In the chronic cases this is rather difficult, but the chronic course, characteristic symptoms and the findings of an exploratory laparotomy will suffice to make a diagnosis.

(*e*) Gastric Parasites.—The parasites that develop in the stomach of the dog are rare, *Spirocerca lupi* being the most common. Occasionally *Gastrophilus intestinalis* larvae are found attached to the mucous membrane. Ascarids and taenia may migrate from the intestines. Taenia are frequently found in the stomach of the cat, *Taenia teaniaeformis* being the most common. *Ollulanus tricuspis* and certain *Physaloptera* sp. are two parasites whose natural habitat is the stomach of the cat.

Presence of the parasites can be confirmed microscopically by finding the ova or larvae in the faeces or vomit. Adult *Physaloptera* may sometimes be found in the vomit of the cat.

(*f*) Hair Ball in the Stomach of the Cat.—Occurs mainly in the long-haired breeds, and only becomes pathological when the mass reaches such dimensions that the animal cannot get rid of the offending material by vomiting.

Diagnosis.—This is made by the palpation of a firm swelling of dough-like consistency, and the fact that the cat, although persistently hungry, is able to ingest only small quantities of food at a time.

(*g*) Enteritis. *Acute.*—The symptoms vary to a large extent with the intensity of the cause. Functional disturbance of the bowel will produce a mild degree of diarrhoea. In the more severe cases the symptoms come on suddenly and are of great severity. Constipation is followed in a few hours by intense diarrhoea, the faeces being liquid and of a brownish yellow colour. The animal usually lies stretched out on the abdomen, showing signs of colicky pains with intense abdominal pain. If there is an associated gastritis, vomiting is also present. The temperature is at first elevated, but later drops to normal or even subnormal. The general symptoms are those of weakness, collapse or prostration, cyanotic mucous membranes, well-marked dyspnoea, and weak rapid pulse.

Chronic.—The general symptoms in this condition are dullness, staring coat, and gradual emaciation with a continuous or intermittent diarrhoea which may alternate with constipation. The bowels frequently are distended with gas due to fermentation. Most cases show little evidence of abdominal pain, except when ulceration or peritonitis supervene. The faeces should be examined for evidence of parasites or ova as these are the most common cause.

(*h*) Infectious Enteritis of Cats.—The onset of this disease is extremely rapid, often a matter of hours, very high temperature and refusal of food being the early and only symptoms. These are rapidly followed by acute vomiting and prostration. The cat prefers to lie in cold places and frequently will be found with its head hanging over the water bowl. It also assumes a very characteristic crouching attitude. Diarrhoea is absent in practically every case. As the disease progresses the animal gradually becomes weaker and comatose. The mortality rate is extremely high, although personally I have found recently that treatment with penicillin and glucose saline has helped to reduce the number of fatal cases.

(i) Colitis.—Occurs frequently in old cats and a characteristic symptom is the fact that the cat usually makes no attempt to defaecate, which helps to differentiate the condition from urethral obstruction where the owner frequently volunteers the information that the cat is constipated. Appetite is impaired and the stasis may exist for many weeks. The firm mass is easily palpable through the abdominal wall and may become enormous in size.

(*j*) Constipation.—Is a condition that is frequently met with in general practice and may simply be due to an arrest in the passage of faeces due to such causes as unsuitable foods or enlargement of the prostate, or it may result from the more serious condition of impaction of the colon; it is seen most commonly in old dogs and is predisposed to by sedentary habits. In the early stages of the condition the animal passes small quantities of hard faecal material, usually with extreme difficulty. Eventually the passage of faeces ceases altogether, and the patient assumes a dull and depressed condition. The appetite is very variable—for the first few days the animal will eat, but eventually refuses all food. Vomiting is a frequent symptom and in some cases a process of backward peristalsis causes the vomit to contain quantities of faecal material. Palpation through the abdominal wall reveals the hard mass of faeces, which can also be demonstrated radiologically and by rectal examination. In a few obstinate and prolonged cases a condition of partial or even complete paraplegia of the hind legs develops, which passes off when the condition of constipation is relieved.

Diagnosis.—Diagnosis is made by abdominal palpation, rectal and radiographic examination.

(*k*) Proctitis.—An inflammatory condition of the rectum usually arises in dogs as a result of the accumulation of small splinters of bone or even from a large piece of bone which, after passing through the rest of the intestinal tract, becomes arrested in the rectum. The dog makes continual attempts to defaecate, which are accompanied by considerable pain and fits of screaming. Even when the offending piece of bone is removed there are frequent attempts to empty the rectum.

Diagnosis.—This is confirmed by the digital exploration of the rectum.

(*l*) Intussusception.—In my experience this condition is much more prevalent in puppies than it is in kittens, and Weipers concurs with this view, although Schnelle of America holds the opposite opinion. The condition manifests itself in the early stages by abdominal pain, and the animal frequently will lie on its back in order to obtain relief. Later, symptoms of acute enteritis develop, with tenesmus, colicky pains, and blood-stained faeces. Palpation of the abdomen reveals the presence of an elongated sausage-like mass, the slightest pressure on which causes intense pain.

(*m*) Volvulus.—The intense abdominal pain, the sudden onset, the rapidly increasing severity of the symptoms and the rapid pulse, serve to identify this condition. Owing to the short mesentery in the dog, volvulus is rare. I have encountered only one case and that was while operating for a suspected case of intussusception.

(*n*) Intestinal Parasites of the Dog. *Round Worms.*—The intestines of the dog usually harbour a vast number of parasites frequently without exhibiting any clinical symptoms. Two of the most common worm infestations met with in the dog are ascaridiasis and ankylostomiasis, the former condition being caused mainly by *Ascaris marginata* and *Toxascaris limbata*. The affected animal shows evidence of a distended abdomen, intermittent diarrhoea, and in spite of a good appetite a general appearance of emaciation and unthriftiness. The coat is poor, being usually dry and harsh with skin irritation. Frequently the dog develops hysteria and epileptiform-like fits, which in some cases may prove fatal. In a few cases if the infestation is heavy, obstruction of the bowel with the worms may result, and in other cases intussusception.

Diagnosis.—Frequently the worms are voided with the faeces; otherwise microscopic examination of faeces will reveal the presence of worm eggs.

In the case of ankylostomiasis the adult worms occur in the small intestine, where they dig deeply into the mucous

membrane and become blood suckers. They produce evidence of a general debility, emaciation and anaemia. The skin in many cases becomes irritated, inflamed and oedematous. Diagnosis again is confirmed by the presence of eggs in the faeces.

Tape Worms.—Dogs frequently harbour many varieties of tape worm without showing any symptoms, except the passing of an odd segment or two. The presence in large numbers is indicated by a variable appetite, general loss of condition, irritability of the skin and irregular bowel actions. Convulsions and fits are much less common than with ascaridiasis. Three of the more common varieties are *Diphylidium caninum, Taenia serrata and Dibothriocephalus latus.*

(*o*) Jaundice.—In diagnosing a suspected case of jaundice it is essential to examine the patient in daylight, as artificial light may mask completely the yellow pigmentation of the skin and mucous membranes which is the characteristic sign. In acute cases there is an elevation of the temperature, vomiting, intense thirst, and general depression. Owing to the absence of bile from the bowel constipation soon supervenes. The urine is always highly coloured and contains bile salts and bile pigments. In cases of jaundice due to spirochaetal infection dark ground illumination forms a useful diagnostic aid.

(*p*) Hepatitis.—Since there is interference with excretion the symptoms exhibited in this condition are those of intoxication of the body. There is general depression, nausea, and vomiting, the vomit nearly always containing a quantity of bile colouring. Icterus is present on the visible mucous membranes. Owing to interference with bile secretion constipation is a frequent symptom, but when diarrhoea does occur the faeces are clay coloured and very foetid. The temperature in the early stages is raised, but later drops to normal or subnormal, due to the retention of toxins and bile salts. The urine is highly concentrated with a high specific gravity and a high percentage of urates and uric acid as well as bile salts.

There are other conditions of the liver which are so rare that I propose only to list them as follows:—Atrophy of the liver, fatty liver, amyloid liver, cirrhosis of the liver, and cholelithiasis of the liver. The last-mentioned condition is sometimes diagnosed by radiography, but most of the others are discernible only by laboratory methods.

Radiological Diagnosis of the Digestive System

Stomach.—The most satisfactory position for radiography of the stomach of the dog and cat is with the patient's left side against the film, as in this position the body of the stomach tends to be more clearly defined. It would appear that the dorso-ventral position could be used to advantage, but the shadow of the liver is so dense as to render a radiograph from this position useless for diagnostic purposes, unless a Potter-Bucky diaphragm is available.

The use of X-rays is of extreme value in the determination of the presence of a foreign body in the stomach. As Schnelle states, " While intestinal foreign bodies are found far more frequently than gastric objects, every intestinal obstruction was once a gastric foreign body. With more accurate diagnosis of gastric foreign bodies many intestinal obstructions could be prevented. In many instances radiography followed by gastrotomy has saved the life of a patient." However, the symptoms of gastric foreign bodies often are so slight that the animal is not presented for treatment until the obstruction has become intestinal. In an examination for a foreign body a plain film first should be taken, as sometimes the presence of a radio-opaque material in the stomach will mask the presence of a foreign body, which may itself be radio-opaque, such as stone, rubber or bone. Should this film prove negative, a second should then be taken following the administration of 2 to 4 oz. of one of the commercial preparations of bismuth or barium. Further films should then be taken three and five hours after the administration of the barium. This will allow time for the barium to leave the stomach, except for a small amount that will remain adherent to the non-opaque foreign body, thereby delineating it.

Under normal conditions the stomach commences to empty about five minutes after the administration of a barium meal and in 15 minutes the opaque material can be seen descending the small intestine. In about two hours the stomach should be empty and four hours after the administration of the meal the barium will have reached the large intestine. Complete removal of the radio-opaque material from the intestinal tract should have occurred within 24 hours.

Delays in the stomach emptying time can be influenced by many factors, both physiological and pathological. For instance, one finds that starches leave the stomach faster than protein, whereas fats slow down the emptying time, as does nervousness and fear on the part of the patient. Intestinal stasis and pyloric stricture will also delay the emptying time. Inflammation of the stomach wall will be demonstrated by the deposition of barium leaving well-marked rugae.

Intestines.—As in the case of the stomach, the lateral position is ideal for radiography of the intestines, although the dorso-ventral position gives good pictures in certain instances. As before, when the presence of a foreign body is suspected a plain film first should be taken, followed by one involving the use of a radio-opaque material. In a large proportion of cases it may be possible to make a diagnosis by palpation of the obstruction, but the advisability of utilising radiography for confirmation should be emphasised. Many cases of suspected foreign bodies in the intestines prove to be enlarged lymph glands, splenic tumours or even vesical calculi. Tenseness of the abdominal muscles due to pain may also render accurate diagnosis difficult unless one resorts to radiography.

Rectal injections of barium can be utilised for showing up the rectum itself and the lower portion of the bowel as far as the ileocaecal valve. Otherwise barium given by mouth will delineate the remainder of the intestinal tract. Both methods used together frequently will reveal the presence of an intussusception as a swollen sausage-like mass outlined anteriorly and posteriorly by barium. The administration of barium by mouth renders the diagnosis of certain types of hernia considerably easier, particularly ventral and diaphragmatic hernias. The presence of abdominal tumours will be indicated by the displacement of the radio-opaque bowel. In cases of constipation in obese dogs, where palpation of the abdomen is nearly impossible, radiography will prove useful in showing the hard impacted mass present in the colon and bowel.

Liver.—In radiography of the liver the patient should be placed in the lateral position, either on the left or right side. A plain film will reveal any abnormality in the size of the organ, or any irregularity in outline of the border. The administration of a radio-opaque material into the stomach may reveal the presence of liver tumours by the displacement of the stomach. Cholecystography is seldom performed in the dog owing to the rarity of gall stones which easily pass down the wide gall duct. However, in view of the importance attached to the thickening of the wall of the gall bladder in recent cases of

hepatitis contagiosa canis this aspect of radiography may assume greater importance. In order to render the gall bladder and bile ducts opaque a solution of the sodium salt of tetrabromphenolphthalein is injected intravenously.

II. URINARY SYSTEM

(*a*) Acute Parenchymatous Nephritis.—This condition commonly is sudden in onset, with a sharp febrile reaction and a strong hard pulse in the early phases, but this later becomes weak and rapid. In the dog a characteristic condition of the mouth develops in which there is a coppery coloured sheen on the tongue and necrosis of the buccal mucous membrane producing an almost diagnostic foul-smelling odour. The patient stands with an arched back in order to relieve the tension on the kidney, and any pressure over the kidney region or any attempt to make the animal move causes intense pain and resentment. In both the dog and cat there is a loss or suppression of appetite, and in the dog vomiting frequently occurs. Initially there is an increase in the volume of urine passed, which is followed by a decrease in volume which varies with the severity of the disease. The urine is acid in reaction, of high specific gravity, and frequently of a smoky colour due to the presence of blood. Microscopic examination of the urine reveals the presence of epithelial casts, red and white blood cells. Seldom are bacteria or pus cells present. Although clinical signs and symptoms suggest a condition of acute nephritis, urine analysis is essential for an accurate diagnosis.

Chronic Interstitial Nephritis.—Differs from the foregoing in the insidiousness of its onset. Irregular attacks of vomiting become more frequent as the disease progresses and there is a gradual loss of condition. A characteristic feature of the disease is the hard, bounding pulse that is always present. Differential diagnosis depends on an examination of the urine which is pale in colour, of low specific gravity, with albumen present in the early stages, but the albuminuria tends to disappear as the disease progresses. Deposits are scanty and epithelial casts are infrequent.

(*b*) Pyaemic Nephritis.—Is frequently secondary to some other condition, the symptoms of which predominate. The demonstration of pus in a sample of urine serves to distinguish pyaemic nephritis from the acute parenchymatous form.

(*c*) Cystitis.—In acute cystitis the animal shows marked symptoms of difficult micturition; there is severe straining as if to micturate, but only small quantites of urine are voided, frequently tinged with blood. The animal stands with an arched back and shows marked pain on palpation of the bladder which usually contains little urine. Retention of the urine may occur in some cases followed by uraemia. The urine is turbid in colour with an increased specific gravity, and an alkaline reaction. The deposits are made up of red cells, epithelial cells, fibrin, crystals of ammonium urate and bacteria.

(*d*) Uraemia.—Is a toxic condition caused by the reabsorption of urine brought about either by renal insufficiency or by retrograde back pressure in the kidneys. It occurs in the dog most frequently as the gastro-intestinal form in which there is severe vomiting, loss of appetite, loss of condition and diarrhoea. All these bodily discharges have a uriniferous odour. Finally, the animal passes into a state of coma. The respiratory form is less common, and may be confused with asthma if the urinary system is not suspected. The cerebral form manifests itself in the form of epileptiform fits or coma.

(*e*) Urinary Calculi.—In the human subject one of the most common sites for the deposition of calculi is the kidney, but after having made a large number of *post-mortem* examinations and radiographs of the kidney I have failed to demonstrate a true kidney stone. In dogs and cats the bladder is the common situation in which to find calculi, although in the male dog the urethral stones are far from infrequent. Cats develop a sabulous deposit in the urethra. Vesical calculi produce symptoms of continual attempts at micturition, due to irritation of the bladder wall and the sensation of a full bladder. Frequently the act of straining produces a small quantity of blood. Palpation of the bladder through the abdominal wall will usually reveal the presence of the stone unless it is fairly small. Retrograde pyelography by means of the intravenous injection of an X-ray opaque material, such as Uriodone Forte (M.B.) will confirm the clinical diagnosis. With urethral calculi the patient makes continuous ineffective attempts to pass urine, although in some cases the animal manages to pass small quantities which frequently are blood stained. The passage of a catheter will reveal the presence and position of the obstruction.

(*f*) Rupture of the Bladder.—The symptoms develop very rapidly, often in a matter of hours. The history of the case will often assist in the diagnosis, particularly if there is evidence of injury. Symptoms of general collapse with a subnormal temperature are present. There is complete suppression of urine, and the passing of a catheter will reveal an empty bladder. The whole animal exhibits a general uriniferous odour. The presence of urine free in the abdominal cavity may be detected by palpation, and puncture of the abdominal wall with a small trochar will reveal the presence of urine. It is essential that the trochar enters the abdominal cavity and not the bladder.

(*g*) Retention of Urine.—The early symptoms are ischuria or painful micturition accompanied by severe straining. The animal shows evidence of abdominal pain, walks with a stiff straddling gait and with the back arched. The symptoms increase in intensity in a short time unless the condition is relieved, until finally the bladder ruptures, in which case there is an immediate temporary relief in symptoms until peritonitis and uraemia develop. A noticeable increase in the size of the abdomen will be observed, due to the distention of the bladder which can be felt on palpation. Retention of urine is, in most cases, secondary to some other condition, frequently urethral calculi, and a careful examination should always be made for the primary cause.

Urine Analysis

Albumen.—1. Cold Nitric Acid Test.—Concentrated nitric acid is run down the inside of a test tube containing urine until an equal volume of nitric acid has been added. If albumen is present it coagulates at the junction of the two fluids, producing a fluffy white ring or opacity.

2. Ferrocyanide Test.—To urine previously acidulated with acetic acid a 10 per cent. solution of potassium ferrocyanide is added and the presence of albumen is indicated by the production of a white precipitate varying in degree according to the amount of albumen present.

Bile Pigments.—1. Iodine Test.—A 10 per cent. alcoholic solution of iodine is run on to a layer of urine in a test tube, and a brilliant green colour develops at the junction of the two layers when bile pigments are present.

2. Gmelin's Test.—Concentrated nitric acid is run down the side of a test tube containing urine and at the junction of the two fluids a variety of colours develop, but the presence of bile pigments is only established when a greenish colour is present.

XUM

Sugar.—Fehling's Test.—The requirements for the test are the two solutions: No. 1 consisting of a solution of copper sulphate in water, while No. 2 solution consists of a mixture of sodium potassium tartrate and caustic soda in water. The two solutions are freshly mixed and boiled and an equal quantity of boiling urine is added. An immediate precipitate of reddish yellow copper oxide indicates the presence of sugar.

Ketones.—Rothera's Test.—A few drops of freshly prepared 5 per cent. sodium nitroprusside solution and a small quantity of liq. ammon. fort. are added to about half a test tube of urine which has been saturated with ammonium sulphate. The development of a deep permanganate colour indicates the presence of ketones.

Indican.—Concentrated hydrochloric acid is added to urine to which a few drops of chloroform have been added. The further addition of a diluted solution of bleaching powder produces a violet blue colour in the presence of indican.

Radiological Diagnosis of the Urinary System

Urography is important in establishing a diagnosis of kidney dysfunction and is best carried out by the use of a special medium containing iodine or one of its salts, which is injected intravenously. With normal renal function shadows should begin to appear two to five minutes after the completion of the injection, and excretion should be complete within one hour. However, in cases of impairment of function it may not be possible to produce shadows before four or five hours or more have elapsed.

In order to get a comparison between the rates of excretion of both kidneys it is advisable to have the animal in a dorso-ventral position, although the lateral position will give an excellent picture of one kidney.

Bladder

Cystography is best carried out with the patient lying on its side, and as with other soft tissue radiography the exposure should be as long as is possible without movement of the patient, while the milliamperage and kilovoltage are correspondingly reduced.

The contrast medium used for the kidneys will in the course of excretion delineate the outline of the bladder. Catheterisation of the bladder and the injection of a 10 per cent. solution of sodium iodide or the injection of air by means of a catheter will outline the bladder and reveal the presence of calculi, but it must be remembered that when air is used and the bladder radiographed it will become a dark shadow and the calculi show up as white objects. In cases where the calculi have a high mineral content, such as the calcium and phosphate stones, a plain film will demonstrate the presence of the calculi.

REPRODUCTIVE SYSTEM

(*a*) Acute Metritis is a condition which usually follows parturition and is characterised by the marked swelling and congestion of the vulva, and a brownish or green blood-stained discharge. The animal shows marked abdominal pain indicated by the tenseness of the abdominal muscles. There are frequent attempts at straining due to the irritable condition of the uterus. Vomiting, lack of appetite, and a general stiffness of gait are present. In the early stages the temperature is elevated, but later drops to normal or subnormal.

(*b*) Chronic Metritis.—Occurs mainly in animals of approximately six to eight years of age, and the symptoms are first noticed a few weeks after oestrus has occurred. Often the first thing to be observed is occasional attacks of vomiting with a capricious appetite and an increased desire for water. At this stage a mistaken diagnosis of gastritis or nephritis may be given, particularly as the patient invariably shows evidence of rheumatic-like pains over the lumbar region. As the disease progresses a marked distention of the abdomen develops and in some cases to such a degree as to simulate pregnancy. Examination of the vulva will reveal the presence of a thick tenacious discharge, varying in colour from a greyish red to chocolate brown, with a characteristic foetid odour. The quantity of discharge varies considerably and in some of the so-called closed pyometras may be entirely absent.

(*c*) Puerperal Septicaemia.—The symptoms develop very rapidly, usually in one to three days, following parturition and the whole condition is characterised by the rapid course it assumes. There is evidence of great depression, and a very high degree of fever—usually in the region of 106 to 107°. The respiratory rate is greatly increased while the pulse is rapid and wiry. In the terminal phases of the disease the temperature drops rapidly, becoming subnormal, and the animal shows signs of prostration and coma. There are marked local changes in the external genitalia, the vulva becoming congested and swollen, as does the vaginal mucosa. There is a copious greenish coloured discharge from the vulva, frequently accompanied by shreds of placenta.

Differential Diagnosis.—Chronic metritis is characterised by the slowness of onset and enlargement of the abdomen, but may be confused with ascites, distention or pregnancy. In the case of acute metritis and puerperal septicaemia the latter is distinguished by the rapidity of onset and the very high degree of fever.

(*d*) Eversion of the Uterus.—Is not a very common condition in the dog and cat owing to the shortness of the body of the uterus. When it does occur there are early symptoms of expulsive efforts on the part of the animal similar to the labour pains of parturition. The patient becomes uneasy and is constantly licking the vulva. When the organ has been prolapsed for any length of time the mucosa becomes dark red and purple in colour and covered with a purulent exudate. By inserting the finger around the periphery of the swelling in order to determine the point of origin it is possible to distinguish this condition from prolapse of the vagina and from tumours.

Radiological Diagnosis of the Reproductive System

There are only two conditions under this heading in which radiology is of any value and those are pyometra and the diagnosis of pregnancy. In the case of the former it is possible, by means of a plain film, to delineate the pus-filled uterus even against the contents of the intestine which are of similar radiographic density: more particularly so, if the patient is placed in the dorso-ventral position as the uterus will appear bilateral.

Pregnancy cannot be demonstrated satisfactorily with X-rays until the 49th day as the foetal bones are not ossified until then. Sartorius, however, has described a method whereby pregnancy can be diagnosed as early as ten days after service. This method consists of filling the abdominal cavity with oxygen and thereby causing the gravid uterus to stand out in relief.

IV. OTHER CONDITIONS OF THE ABDOMEN

(*a*) Peritonitis. *Acute.*—Onset of symptoms is very sudden, particularly when peritonitis is caused by injuries, abscesses or perforation of the bowel. In the early stages persistent vomiting and intense abdominal pain are promi-

nent features. Pain is a prominent symptom, the animal walking with a stiff, unnatural gait, and a tucked-up abdomen. Resentment is shown on abdominal palpation which may reveal diffused or localised areas of tenderness. Respirations are usually of the costal type, but if the quantity of exudate present is great there is marked dyspnoea. The temperature at first is high but very soon drops to normal and then subnormal. The pulse is rapid, hard and wiry, eventually becoming weak and irregular. There is a complete loss of appetite and the quantity of urine voided is diminished and highly concentrated, containing large quantities of indican. Except in the rapidly fatal cases, there is an effusion of fluid into the abdominal cavity, which produces a dull area on percussion. The area of dullness varies according to the position of the patient.

Chronic.—In this condition the onset of symptoms is a very gradual process; frequently the first to be noticed is an enlargement of the abdomen. On palpation of the abdomen pain is usually absent. Percussion shows an area of abdominal dullness, and auscultation reveals the presence of fluid which, owing to the presence of a large number of cells, is of a turbid yellow colour. The temperature is nearly always normal, the pulse is rapid and irregular, and the respirations are increased, due to the increased pressure on the diaphragm. Generally the symptoms are very similar to those of ascites.

(*b*) Ascites.—It is seldom possible to make an accurate diagnosis of ascites until enlargement of the abdomen occurs. The amount of fluid present can be determined by the position of areas of dullness revealed on percussion, and this will vary according to the position of the patient. The temperature is normal, the pulse weak, and severe dyspnoea occurs due to increased pressure on the diaphragm. In many cases the visible mucous membranes become cyanotic. Urine is diminished in quantity and highly coloured due to concentration. There are seldom any other changes in the urine.

Diagnosis.—Ascites may be mistaken for acute or chronic peritonitis, but a differential diagnosis may be made by examination of the fluid obtained by abdominal tapping. Advanced pregnancy may be recognised by the palpation of the foetus. Abdominal tumours are distinguishable by having a much firmer consistency and their position is stationary, *i.e.*, there is no alteration in position of dull areas on percussion, when the patient's position is altered. A distended urinary bladder is similarly distinguished by its consistency and permanent position.

(*c*) Leukaemia.—The symptoms of this condition are seldom recognised until the disease is well-established. The initial symptoms are those of anaemia with well-marked pallor of the visible mucous membranes. There is a gradual enlargement of the lymphatic glands, particularly those in the submaxillary space, the pharangeal, inguinal and popliteal regions. The enlarged glands are firm and non-painful on palpation. Owing to involvement of the bone marrow, there is stiffness, soreness and lameness, and the long bones show marked pain on palpation.

Diagnosis.—Is largely built up from an examination of the patient's blood, which assumes a pale red or brown colour due to the reduction in the amount of haemoglobin present. When a blood sample is allowed to stand it separates into two layers, the upper consisting of white blood cells and fibrin, while the lower is comprised of red blood cells. The total number of W.B.C.s is increased, while it is nearly always possible to demonstrate a decrease in the number of R.B.C.s. A differential diagnosis can be made only by a blood examination, which reveals that in lymphatic leukaemia the lymphocytes predominate, whilst in myeloid leukaemia it is the leucocytes that are increased.

(*d*) Pseudoleukaemia (Hodgkin's Disease) exhibits symptoms and clinical signs in many respects similar to leukaemia. The condition is characterised by a progressive anaemia and enlargement of the lymphatic glands. The main differential diagnostic feature is the fact that the ratio between the R.B.C.s and the W.B.C.s is normal.

(*e*) Diabetes mellitus.—This condition is characterised by an increased thirst and appetite. The patient appears dull and listless and becomes fatigued very easily. Gingivitis may be present and the buccal mucous membrane appears dry. The main change, however, occurs in the urine, which is greatly increased in quantity, of a pale straw colour, with a definite specific gravity (1040 to 1060), and the sugar content increases by about 3 to 6 per cent. This amount varies depending on the type of food, *i.e.*, carbohydrates will increase the amount, whereas nitrogenous foods decrease it. Keratitis of one or both corneas may be observed as the disease progresses, as well as opacity of the lens. Frequently there is secondary involvement of the respiratory tract producing laryngitis or tracheitis. Other symptoms which may be observed are pneumonia, diarrhoea, ulceration of the skin, etc.

Diagnosis.—This is based on the gradual emaciation of the animal, the high specific gravity of the urine, and the presence of sugar therein.

The condition of diabetes mellitus must be distinguished from polyuria in which the symptoms are more variable and tend to clear up after an alteration in diet. A differentiation must also be made from diabetes insipidus in which the characteristic feature is the low specific gravity of the urine.

(*f*) Hernia.—I propose to deal very briefly with the three types associated with the abdomen—Umbilical, Ventral and Diaphragmatic.

(i) *Umbilical.*—Occurs very frequently in young puppies and in many cases I think is due to severance of the umbilical cord too close to the body. In these cases a small pad of fat protrudes through the umbilical opening. This swelling is soft, fluctuating and non-painful. Surgical interference will readily correct the condition, but in many animals no attempt at reduction is made, and a perfectly normal healthy life follows—strangulation in these cases is extremely rare.

(ii) *Ventral.*—Are characterised by the sudden appearance of a swelling on the abdominal wall—the size depending largely on the extent of the tear in the abdominal muscles. Usually there is some history of a violent injury. Palpation of the swelling will reveal a soft fluctuating mass which, except in cases of strangulation, can be reduced. On returning the mass to the abdominal cavity the hernial ring can be palpated. It is necessary to distinguish this condition from that of an abscess by careful palpation or by exploratory operation.

(iii) *Diaphragmatic.*—Is not a common type of hernia, but is frequently the sequel to a road accident when there is a rupture of the muscle of the diaphragm, which allows abdominal contents to penetrate into the thoracic cavity. The symptoms are usually sudden in onset and consist of extreme restlessness, pain and severe dyspnoea. The animal usually survives only for a short period. A few cases of congenital diaphragmatic hernia have been recorded. These, as a rule, exhibit no symptoms.

Summary

An attempt has been made to cover a very extensive subject in as short a space as possible and a brief summary

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has been made of the clinical signs and diagnosis of the various conditions commonly met with in the abdomen of the dog and cat. Special attention has been paid to the use of radiography as an essential aid in making an accurate diagnosis, particularly in diseases of the digestive and urinary systems.

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Discussion

Miss O. D. James, M.R.C.V.S. (Cardiff), who was the first opener of the discussion, said:—

The importance of accurate diagnosis cannot be over-estimated, neither can its difficulties be minimised. In spite of our long years of training in the basic sciences, and even in the field of small-animal practice where the sentimental often outweighs the purely economic aspect, thus enabling us to utilise expensive extra clinical aids, it is still the hurdle at which we most frequently stumble.

Following Mr. Lauder's classification:—

(1) The Digestive System

(*a*1) *Acute Gastritis.*—Diagnosis of this condition is somewhat difficult, as similar symptoms result from disorders of so many other organs. Pain on palpation of the epigastric region is a fairly constant sign, also in non-infectious cases a history of recent ingestion of food abnormal in amount or constitution.

(*a*2) *Chronic Gastritis.*—This is often a legacy of a virus infection. Vomiting is frequently confined to mornings, and is presumably connected with a deficiency of gastric enzymes, as administration of these substances frequently leads to a marked improvement.

(*b*) *Ulceration of the Stomach.*—I have never diagnosed this, as a primary condition similar to that occurring in man, but have found massive erosive areas characterised by severe haematemesis in the later stages of uraemia, also true circumscribed ulcers, after ingestion of phenols.

(c) *Foreign Bodies.*—I concur with Mr. Lauder regarding the amazingly diverse objects recovered from the canine stomach, often without any obvious symptoms having been shown. Intermittent vomiting, combined with the history of ingestion of inedible objects, is often an indication for a radiological examination. Pebbles and marbles can usually be palpated and seem comparatively harmless, but portions of sorbo rubber ball and sharp-pointed objects have in my experience proved the most dangerous. I recollect one case of a borzoi which swallowed some cod liver oil complete with bottle, and strangely enough recovered!

(*d*1) *Acute Dilatation.*—This condition is fairly simple to diagnose. Rapid abdominal enlargement combined with an anxious expression and marked dyspnoea give a clear picture, especially in conjunction with a history of over-feeding, usually on rapidly fermentable food. One case of an Alsatian puppy which had eaten 2 lb. of mouldy bread had a fatal termination, death being due to gastric rupture.

(*d*2) *Chronic Dilatation.*—I have diagnosed only two cases, both being in puppies with pyloric stenosis. The most typical symptom was a slight increase in size of the abdomen a short time after food, followed by vomition and apparent relief.

(*e*) *Gastric Parasites.*—I have never diagnosed true gastric parasites, but ascarids, taenia segments and even tapeworms have been found in the vomit. I had one case of a puppy which developed a sudden urticarial rash followed by vomition. The vomit contained two live caterpillars, species unknown.

(*f*) *Hairball in Stomach of the Cat.*—The symptoms are quite characteristic, but I have found several cases in short-haired cats, especially those whose diet contains little roughage.

(g) *Injectious Feline Enteritis.*—I have found one of the most characteristic symptoms to be a peculiar cry, emitted on palpating the abdomen in the region of the small intestine, probably due to pain on pressure of the circumscribed area of inflammation which is a usual *post-mortem* lesion. A differential white cell count should also be a diagnostic aid.

(*h*) *Colitis.*—In my opinion this condition is characterised by diarrhoea, sometimes with alternating constipation, and usually accompanied by the passage of pools of mucus.

(*i*) *Constipation.*—Commonest cause appears to be the ingestion of large amounts of bone with the subsequent formation of cement-like masses; faecal material in the vomit is frequently the forerunner of a fatal conclusion. In a large number of comparatively mild cases of intestinal stasis paresis or paraplegia has supervened, especially in Pekinese and dachshunds—presumably due to autotoxaemia or direct nerve pressure.

(*j*) *Proctitis.*—Sharp pieces of bone are certainly the commonest cause, but I have seen several instances of swallowed needles transfixing the anus and had one case of a corned beef tin key complete with tinfoil which had caused no symptoms until it reached this site.

(*k*) *Intussusception.*—This is far more prevalent in puppies than in kittens. I find that it occurs most frequently after injudicious worming or during an attack of distemper. The typical sausage-shaped mass is usually easily palpable, but an additional diagnostic aid is the frequency of anal prolapse.

(*l*) *Volvulus.*—I have seen only one case, following a street accident. The termination was fatal and the diagnosis made *post-mortem*. An abnormal mass was palpable, but I could not decide of what it consisted.

(*m*) *Intestinal Parasites of the Dog.*

Round Worms.—In addition to the usual symptoms, I have had cases of urticarial eruptions and eczematous conditions which cleared up completely after satisfactory worming. I have had several cases of complete obstruction by ascaris species, in which on palpation the intestines felt like knotted string, but have had more cases of intussusception caused by drastic vermifuges than by worms.

Tape Worms.—In addition to the symptoms mentioned, I have found a tendency to yawning and snorting to indicate infestation with these parasites. I should like to stress the importance of establishing the species of taenia, in view of several recent cases of human infection with *Taenia echinoccus* in this area.

(*n*) *Jaundice.*—The onset of jaundice can usually be forecast before pigmentation is apparent, by the intense depression it engenders. Vicious dogs become docile and apathetic. The temperature becomes subnormal when pigmentation develops.

(*o*) *Hepatitis.*—The only cases I have diagnosed have been after administration of a volatile anaesthetic when ketonuria has been a prominent symptom.

Radiological Diagnosis of the Digestive System

I have little to add here, except to state that with a powerful set the dorso-ventral position for gastric lesions gives a better idea of the general picture than a lateral. In many instances I have had better results from plain films than from the use of radio-opaque substances.

(2) Urinary System

(*a*1) *Acute Nephritis.*—I agree that urine analysis is essential to diagnosis, and since the causal agent may be *leptospira*, agglutination and/or dark ground examination should be invoked.

(*a*2) *Chronic Nephritis.*—Excessive thirst accompanied by polyuria are the most constant symptoms of this all-too-common condition.

(*b*) *Uraemia.*—I have found the gastro-intestinal syndrome most common in cases of chronic nephritis. Haematemesis is very marked, and if not immediately fatal is followed by epileptiform convulsions, coma and death.

The respiratory form I have met with only following retention of urine and after the ingestion of phenols. Milder cases show an intractable pruritus of some part of the body, usually accompanied by a urinous odour of the breath.

(*c*) *Urinary Calculi.*—I have been unable to demonstrate renal calculi *ante-mortem*, but in three cases have discovered stones *post-mortem*. During life the symptoms included rigidity, arched back, paroxisms of pain, followed by urination and apparent relief. I have found vesical calculi to be common in the bitch, but not always easy to palpate. Administration of a sedative and withdrawal of urine by catheter or large bore hypodermic needle are useful measures. In several cases, however, the animals literally rattle on movement, due to smooth-facetted stones.

(*d*) *Rupture of the Bladder.*—Over-distension from cystitis, paralysis, etc., is a more frequent cause of rupture than trauma. I have known death to occur within 15 minutes of rupture.

Urine Analysis

Albumen.—I find the *salicyl-sulphonic acid test* to be somewhat more accurate than the nitric acid. To a 1 inch column of urine in a small test tube add 10 drops of 25 per cent. salicyl-sulphonic acid; a white precipitate indicates a positive result.

Ketones.—Gerhardt's test is often useful. To 5 c.c. of urine in a test tube add 10 per cent. ferric chloride, drop by drop, until there is no further precipitation of phosphates, then add more ferric chloride. A claret red colour indicates the presence of acetone bodies, aspirins, etc.

(3) Reproductive System

(*a*) *Chronic Metritis or Pyometra* may be non-inflammatory in origin, thus there is no marked rise in temperature. I have not found this condition to be confined to any age group, and have had several cases in two-year-old maiden bitches. Discharge is frequently absent until stimulated by appropriate treatment. Palpation in suitable subjects reveals a uniform uterus of doughy consistence.

(*b*) *Eversion of the Uterus.*—I have encountered this condition fairly frequently in bitches and cats, mostly immature animals with some history of malnutrition followed by a large litter. The everted portion usually consists of one horn only.

Radiological Diagnosis of the Reproductive System.

Radiography is useful in suspected pregnancy, where only one or two foetuses are carried high under the ribs, also in very obese subjects

4. Other Conditions of the Abdomen

(*a*) *Chronic Peritonitis.*—Usually post-operative in origin with circumscribed adhesions, frequently with surface drainage through the line of incision or a suture hole; more rarely may be of tuberculous origin.

(*b*) *Diabetes Mellitus.*—Diagnosis depends on the *persistence* of sugar in the urine, and on abatement of the symptoms following insulin therapy. I have encountered marked but transitory glycosuria after anaesthesia.

(*c*) *Hernia.*

Umbilical.—Rarely offers much difficulty in diagnosis as the actual ring is usually palpable. I consider both umbilical and inguinal hernia to be in some degree inheritable, as I have noted it to occur through several generations, especially in Pekinese.

Ventral.—Usually of traumatic origin; thus early diagnosis is complicated by oedema, which prevents complete replacement. There is, of course, no ring in the strict sense of the word.

Diaphragmatic.—I have known several cases of this condition in which the subjects have survived and lived fairly normal lives for several years. Moderate dyspnoea, increasing after food and on descending steps, has been the most constant symptom. The diagnosis was confirmed radiographically. If the tear is large, portions of stomach, liver, spleen and intestines may be in the thoracic cavity, and clinical diagnosis is facilitated by the empty feel of the anterior abdomen. In all my cases the rupture has been to left of mid-line.

I should like to make brief mention of a few other cases involving the abdomen.

(*a*) *Tumours.*—Palpable in thin animals as abnormal swellings, usually painless; must be differentiated from swollen lymph glands, foreign bodies and prostatic enlargements. In certain cases urine tests and the presence of visible metastases serve to confirm the diagnosis.

(*b*) *Rupture of the Abdominal Organs*, such as liver, spleen, etc. Symptoms are shock, gradual abdominal enlargement, accompanied by increasing pallor of the visible mucous membranes, thready pulse and sub-normal temperature.

In conclusion, I should like to stress that the undoubted difficulties of abdominal palpation, especially in large or obese animals, may be minimised by the withholding of food, the administration of a mild laxative, and in cases where there is no contra-indication the injection of morphine (for both its sedative and emetic actions), or, if necessary, the administration of a short duration general anaesthetic.

Finally, after witnessing Dr. Spreuli's demonstration of spinal anaesthesia, I consider that in selected cases this may be the ideal method.

Mr. J. W. Heney, M.R.C.V.S. (Dublin), the second opener of the discussion, said:—

Before presenting my contribution, I would like to take this opportunity of stating how much I appreciate the honour which your Committee has bestowed upon me to-day, especially in view of the fact that my co-opener is a member of the fair sex.

It is my very pleasant duty to heartily congratulate Mr. Lauder on his valuable contribution to abdominal diagnosis. He has dealt with this all-important aspect of our work in an extremely practical and forthright manner. In the time at my disposal it would be impossible to cover the field presented by the essayist. No doubt the discussion to follow will present items of great interest. It is my intention, however, to mention certain aspects of the paper and add notes on endoscopic examination, and pregnancy diagnosis, particularly in relation to dystocia.

When dealing with a paper on diagnosis one is at times tempted to cross the boundary into the realm of treatment. I feel sure that Mr. Lauder, when writing his paper, experienced this difficulty. Nevertheless, one may be permitted to mention certain surgical techniques as being part of diagnostic procedure.

Opening the abdominal, or strictly the peritoneal, cavity with a view to exploring the contents may be constituted diagnosis, especially for the location of foreign bodies, ascertaining the causation of ascites, preparatory to the treatment of dystocia, and other conditions. In many cases one is unable to furnish a just prognosis until visual examination of the cavity has been performed. Correct diagnosis is, of course, the essential preliminary to correct treatment.

I agree with the writer that in diagnosing acute abdominal diseases one must exclude medical conditions before concluding that one is dealing with a disease requiring surgical intervention.

As Mr. Lauder states, all practitioners can record weird cases of gastric foreign bodies. A collie dog was brought to my surgery, and the only history supplied by the owner was that the animal showed evidence of acute pain during the act of feeding. A plain X-ray of the stomach revealed a bunch of six fish hooks, which it was subsequently proved were anchored to the lining mucosa by means of the barbs.

Pyloric Stenosis and Coprostasis may often be diagnosed by the fact that radio-opaque material is retained for a longer period than usual. I agree that a number of cases of gastritis may be diagnosed by the presence of barium rugae after normal emptying time. In passing, it would appear that these radio-opaque substances exert some beneficial effect on an inflamed mucous membrane, thus affording the animal some temporary relief. I am anxious to learn if Mr. Lauder is prepared to concur with this belief.

Infectious Enteritis of Cats.—The symptoms of this disease as described in the paper are very clear, but I would add that the changing character of the vomited material to a greenish yellow colour is important.

Intussusception.—It is agreed that puppies are the commonest victims of this complaint. I can record only some ten cases in the young cat. Whilst I agree that palpation may be of help in appreciating the so-called sausage-shaped mass, I believe that one should if possible confirm by X-ray examination after the administration of diodrast per rectum. If after thorough examination there still remains doubt about the diagnosis of intussusception, it

should be regarded as less risky to perform exploratory laparotomy than to wait for the onset of serious acute obstructive symptoms.

Intestinal Parasites.—Whilst not wishing to be at variance with the writer, I cannot agree completely that the usual text-book picture is always reliable to diagnose worm infestation. I have seen many cases—and I believe Mr. Lauder will agree—where the animal is in apparent excellent health, yet, when suitably treated, proves to be heavily infested with parasites. Examination of faeces microscopically will be of help in the determination of the degree of infestation.

Chronic Interstitial Nephritis.—It is my experience that this is the commonest form of the disease, and that upwards of 50 per cent. of dogs, especially those of the terrier group, are affected to a lesser or greater extent. It is suggested that albuminuria decreases as the disease progresses until there is very little albumin present. This appears to be true, and in the urine analysis the more sensitive salicyl-sulphonic test might be preferred to the more usual nitric acid or ferrocyanide tests. The disease usually affects dogs from five years old upwards.

On the question of purely clinical diagnosis of *Leptospira canicola* infection there are considerable difficulties, as this is a disease in which laboratory tests can be of real help to the clinician. This appears to be particularly the case if one can subject a sample of blood for test in the early stages of illness when antibodies are absent or present in small amounts, and then another specimen is tested later by which time a high titre will be recorded. Repeated microscopic examinations of urine after clinical recovery will decide whether the animal is still carrying the leptospirae, and requires further treatment, and blood urea tests at intervals will determine whether the infection has resulted in permanent kidney damage. From the results of a recent survey throughout various parts of England it would appear that the infection is widespread and it is estimated by J. C. Broom, M.D., that a conservative 20 to 25 per cent. of positive reactors will be found in any random sample of dogs. The blood samples which we submitted for test from Dublin resulted in a positive agglutination in over 80 per cent. of cases. *Leptospira icterohaemorrhagiae,* on the other hand, was negative in all dilutions in every sample. It is now known that one of the biggest dangers both to other dogs and humans is the healthy carrier dog, which may be shedding heavily infected urine without showing any signs or symptoms of illness.

Cystitis.—In addition to the symptoms described, I would add that the male dog usually adopts the stance of the female during urination.

Urinary Calculi.—The essayist refers to the extreme rarity of kidney stones in small animals. I am in total agreement with this view, and have observed only one case of nephrolithiasis in an eight-year-old Dalmatian, which showed marked dysfunction of both kidneys, uraemia, and extreme emaciation. *Post-mortem* examination revealed the pelvis to be completely occluded with irregular sharp calculi. Retrograde pyelography is, I agree, an excellent means of diagnosis, using one of the specified agents administered intravenously. Using the Uriodone series, I have been successful in producing photographs showing kidney, pelvis and ureters in 15 minutes, and finally the urinary bladder in 20 minutes.

Rupture of the Urinary Bladder.—In addition to the diagnosis which the writer suggests, might I add another test for the diagnosis of this serious complaint The bladder is fully drained of urine by catheter, and a measured quantity of normal saline introduced, and then drawn off and measured. Any serious discrepancy between the amount introduced and that drawn off would suggest rupture of the organ.

Endoscopic Examination of the Abdominal Cavity

Peritoneoscopy.—This is the procedure of visualising the peritoneal cavity, and its contents, by means of an optical instrument. The first demonstration was carried out by Kelling 49 years ago on a living dog using a Nitze cystoscope. Any procedure that allows one to see the diseased organs clearly and sharply through a small opening in the abdomen is ideal. Peritoneoscopy does not and cannot replace laparotomy, but it might be the procedure of choice in the diagnosis of a great number of abdominal conditions.

The following conditions have been noted through this illuminated instrument: cirrhosis of the liver, passive congestion of the liver, cystic ovaries, pregnancy, haemorrhage, neoplasia, localisation of intestinal foreign bodies, haemangioma of the liver and spleen, and ascites. Animals suffering from the last-mentioned complaint are the best patients since the abdominal wall is stretched by fluid, which fluid when withdrawn allows the easy introduction of air. The air is always removed after examination, although some residual air, localised between the liver and diaphragm, often remains. This has been noted occasionally in cases examined by X-ray shortly following peritoneoscopy. It is possible with this instrument to diagnose a questionable case without delay, also to decide early the advisability of surgical intervention in animals showing grave pathology.

Hernias may be visualised from inside the peritoneal cavity, and the tip of the telescope may even be placed in the hernial ring. In this manner one may ascertain if adhesions are present. The instrument best adapted to the abdomens of our patients in comparison to the human subject is, I believe, the Coryllos Thoracoscope. As the name implies, this instrument is used for chest examination in the human field, but is smaller than the Ruddock Peritoneoscope, and the principle is exactly the same. The abdominal puncture is smaller since the diameter of the tube is less than the peritoneoscope.

I would be extremely pleased if Mr. Lauder would express his views regarding this form of diagnosis.

Diagnosis of Pregnancy in the Bitch and Cat

Taking into account the history as supplied by the owner, a diagnosis of pregnancy may often be made by abdominal palpation, though in some cases one cannot be certain even in late stages of suspected pregnancy. As Mr. Lauder states, a radiological investigation in pregnancy will only prove of value when the foetal bones are sufficiently ossified to cause a shadow, from the 49th day onwards. There is not, of course, any laboratory biological test to determine early pregnancy in the bitch or queen by means of urine test as in the case of the mare and human subjects.

A reliable diagnosis of pregnancy may be given from the 28th day, though Wright suggests the 18th to 21st day. Whitney, of U.S.A., concurs with this opinion. In the case of phantom pregnancy one is compelled to await full term before arriving at a decision.

Great difficulty in returning a diagnosis is sometimes experienced in the obese subject, even with the assistance of X-ray. This difficulty, I believe, is seen in the bitch or queen carrying one or two foetuses, especially when these are placed in an anterior position in the horns.

It is my belief that the commonest factor causing dystocia is uterine inertia, and here one should decide early whether a uterine stimulant be given or an exploratory laparotomy be performed, with a view to caesarean section, or complete removal of the uterus. Too often one encounters cases where the matrons have been in labour for considerable periods before professional aid is sought. In such cases one finds complete uterine inertia with exhaustion. The inevitable result is a grave prognosis.

A foetal dystocia is often seen in certain breeds, such as bulldogs, Boston terriers and others with broad heads. The pedigree Persian cat may be included in this category. Pelvic constriction of the female or the presence of new growths in the vagina may, of course, give rise to a maternal dystocia, necessitating the abdominal birth of the young. X-ray pictures when clearly demonstrating the foetuses *in utero* should give a good indication of the presentation.

Repeated X-ray examination, especially by "screening," should not be tolerated, as the lives of the young may be endangered.

Finally, I would again congratulate Mr. Lauder on his work, and feel confident that the discussion to follow will do full justice to his admirable presentation.

General Discussion

The Chairman: The paper is now open for general discussion, and we also invite any visitors to enter into it. I am sure Mr. Lauder and the openers have given us ample material.

Dr. Garfield Evans (Cardiff): In the ordinary way I deal with the radiology of human beings, but I am always pleased to help the veterinary surgeon when a pet is brought to me for an X-ray examination.

Foreign bodies in the oesophagus which are opaque to X-rays can be detected easily, but obstruction due to a small piece of bone may be difficult to diagnose. Small pieces of cotton wool soaked in a barium emulsion and pushed down the throat will reveal an obstruction in the oesophagus and the exact level can be made out either by screening with X-rays or by taking an X-ray film. In human beings ulcers in the stomach and duodenum are diagnosed by means of the barium meal; the crater of the ulcer fills up well with the barium, which is very opaque to X-rays and shows up very well during an X-ray examination. I see no reason why a similar examination should not be very helpful in the case of animals. Opaque foreign bodies in the stomach or intestines are easily revealed by X-rays. A hair-ball in the stomach is not opaque to X-rays, but it can be outlined by giving a little of the barium meal and thereby a correct diagnosis made. Malignant disease in the stomach shows up as a filling defect when the stomach is filled up with barium. A malignant growth in any part of the bowel often causes a constriction of the lumen of the gut, producing obstructive signs such as a slowing up of the passage of the barium meal and distension of the intestine on the proximal side of the growth.

When the intestinal tract is investigated by means of X-rays and a barium meal is given by mouth or a barium enema injected, then the examination should include antero-posterior, lateral and, if possible, oblique views as well. I should say that the X-ray examination of the pregnant uterus is often most helpful; in the human being it is at present almost a routine examination.

Urinary calculi and chronic gallstones can usually be revealed by X-rays. Cholecystography and pyleography are comparatively new methods of investigation which will undoubtedly be used more and more in the case of animals. Abdominal tumours, especially those with calcareous degeneration, can often be revealed by X-rays.

I have mentioned only a few of the radiological investigations which would be useful when dealing with the animal patient.

I congratulate the previous speakers on their papers and I have been very impressed with the recent advances which have been made in the radiological investigation of diseased conditions in animals and further progress is undoubtedly close at hand.

I wish the Conference in Cardiff all success.

Mr. H. Raynor Hewetson (Southport): There is one point on which I am in full agreement with Mr. Lauder and that is that he has been given an impossible task. To attempt to cover over 40 different conditions in about 5,000 words can only lead to one thing, indulging in generalities, when really in papers in this Congress we are more interested in finer details of personal observation. Mr. Lauder has done his best with a difficult job, but he has devoted a fair amount of words, which I think he could have saved, to radiography and urine analysis. I do not want in any way to minimise the contribution from Dr. Garfield Evans, but X-ray and urine analyses have taken up a lot of the available time, and in my opinion they are not clinical diagnosis. I do not think any small-animal practitioner to-day would fail to make full use of these aids, but we must not overdo these angles. Actually, I think X-rays are used in a lot of cases where ordinary methods should have arrived at the same conclusion. They should be largely confirmatory and not an easy way of getting a diagnosis. They cannot show everything and may be misleading.

In my early days of using X-rays I had a case presented which from the radiograph I diagnosed as a leather bottle stomach. I felt sure of it from a clinical point of view, so I sent the pictures to a friend, a well-known radiologist, who told me the pictures showed nothing, and could not be diagnostic from the exposure I had had to give. I destroyed the dog and sent the stomach to Dr. J. R. M. Innes at Cambridge. He told me that until a few weeks before, when he had had one sent in, he had not believed that leather bottle stomach occurred in the dog, and now I had sent him another. He asked for my radiographs, which he took to a radiologist in Cambridge, who said they were of no diagnostic importance, so that though in this case faulty interpretation led to a correct diagnosis, it might just as well have been the other way round.

In the diagnosis of abdominal conditions palpation is of great value, and where owing to tenseness of the abdominal muscles this cannot be effectively carried out, and the condition of the animal makes us reluctant to administer a general anaesthetic, we should find it a great help to use epidural anaesthesia, of which we had such an excellent demonstration by Dr. J. S. A. Spreull yesterday.

I am only going to touch on one or two points where I disagree with Mr. Lauder. First, a condition which is probably not abdominal, is certainly not an enteritis, and may not be infectious, and that is feline enteritis. The first consideration to decide is whether the vomiting is due to enteritis or some other cause. Having the misfortune to keep cats on my own premises, I get occasions when cats suddenly start to be sick and die, and the owner returns to find there is no cat. This experience gives me the opportunity to observe things from the start, and while the cat may go off its food as a preliminary, this is not always noticeable, neither can one attribute any great importance to the presence or absence of an elevated temperature.

The diagnosis depends on the incidence and character of the vomit. Usually the first thing to be noted is that an apparently well cat vomits a fairly copious white or colourless watery material without food, followed rapidly by two or three small amounts of a similar nature. In a few hours this vomit becomes yellow and frothy, usually accompanied by severe retching. The other symptoms mentioned by Mr. Lauder may also be present, but in my view it is the vomiting as described which is characteristic.

I do not think Mr. Lauder and I refer to the same condition when we speak of colitis. I regard colitis as a condition, particularly of old dogs, where you start with fairly frequent passage of faeces, which develops into diarrhoea with a certain amount of mucus accompanied by straining and some inflammation of the rectum. This is completely resistant to oral medication, but usually responds fairly rapidly to colonic lavage. I do not like to use too many human terms for animal conditions, such as Hodgkin's disease, and so on, but the condition Mr. Lauder described as colitis is more like that seen in human beings called megalocolon or Hirschsprung's disease, where you get a persistent mass of dry material in the colon, probably due to atonicity or paralysis of the bowel wall.

I would like to refer to one case which, in my experience, is unique. I do not think any veterinary literature refers to or agrees the existence of renal colic in the dog. Under ordinary circumstances it would be an extremely difficult thing, if not impossible, to diagnose, but I had what I believe to be a case in a spaniel bitch of my own, where I had ample opportunity for long-continued observation. The history of the case was that this bitch suddenly showed signs of intense pain. It was difficult to say where the pain came from; she was continually on her feet, would walk a few yards, stop and give a little cry, and then walk on again. This would go on for hours at a time unless given relief, and the only thing which did this was an injection of Novalgin. When she had an injection she would become a perfectly normal dog for a few hours and relapse. She was never, or very seldom, sick, the bowels were always normal, and when out of pain would eat and behave normally. This went on for about three weeks. I got Professor Wright to see her and he could not give me any idea where the pain came from. We X-rayed her, nothing was shown, and then the pains passed off and she was all right for two or three months. Then the same thing happened again over a period of a few days and then passed off. I thought that as it was not gastro-intestinal, and there were no uterine symptoms, it must be something in the urinary system. I started careful observations of urine; every time she voided it I tried to collect it without contamination. During the periods when she was quite well, and during the early periods when she was in pain, I never found anything, but usually two or three days afterwards I would find tiny little calculi. I am quite sure her pain was due to calculi passing down the ureters. I may be wrong, and I have no conclusive proof, but it seems a justifiable conclusion that this was a case of true renal colic. The first attack was the worst; further attacks recurred at intervals for about 18 months, after which for the remainder of her life, about two years, there was no recurrence.

Ascites and jaundice are not diseases but symptoms of some other disease, and would require a whole paper and discussion to give reasonable consideration to these alone.

I have not had a lot of cases of leptospirosis due to *canicola* infection, but where they have arisen I have nearly always found that a careful probe into the history reveals that a few days before the patient was noted to be ill, the owners had observed a temporary stiffness of the hind limbs which had passed off. I have also found that I have been called in to see dogs whose only symptom was this stiffness of the hind quarters, but which a few days later showed signs of leptospirae. I do not know whether this is a symptom of any diagnostic importance or not, but I think it is worth noting.

I have covered only a very few points because time does not permit more, and I hope to hear further comments from others.

Miss O. Uvarov (Ewell): Mr. Lauder has asked for criticism and I will start straight away. A subject like this could have been almost a text-book of references to abdominal diseases, but a big field has been covered, and it must have beeen difficult to leave out treatment. I congratulate Mr. Lauder and the other openers on taking this on so bravely; the excellence of the papers lies in the fact that good gaps are left for discussion.

One can only go through the various diseases. I wonder how much chronic gastritis is really gastritis or whether it is due to secondary conditions such as kidneys, or liver. I would like Mr. Lauder to clarify the urine findings in the so-called chronic gastritis:

XUM

is the dark coloration due to urinary pigments or bile? I would also like to comment on the disagreeable smell; it is most important that we should trace something from the various smells, because they help in the diagnosis of abdominal troubles. I would like to know what interpretation to put on "disagreeable."

With hair-ball in cats, the most important thing is the time which a cat can harbour a hair-ball. I have recently had a case of one cat, brought in for euthanasia, that had a history of occasional vomit and indigestion for 18 months, and on *post-mortem* examination it was found she had a hair-ball weighing 2 lb. 2½ oz., yet she was able to live all that time without really being ill.

Colitis in cats can be frequent, but I do not know that it is found as a mass; it is a much more diffused condition and is not always palpable.

In the paragraph on nephritis and urine analysis, it is extremely easy to digress into the merits of urine analysis and kidney diseases, and Mr. Lauder was very wise to leave that as short as he has done. Mr. Lauder says in the first stage of nephritis there is an increase of urine. I find in the first stage of nephritis there is a decrease; it is only when it has gone on for a day or two that it increases, and in the third stage there is a decrease in the volume of urine again.

Mr. Lauder says a cat suffering with nephritis shows complete loss of appetite; could he state the incidence of nephritis in cats as compared with dogs? I should certainly feel very diffident in diagnosing the condition in cats, because the very fact that you cannot get urine analysis will rather deter you from diagnosing acute nephritis.

Some years ago a short survey on kidney diseases was made on cats; these were mostly *post-mortem* cases. Kidney lesions were found, but they were mostly degenerative rather than inflammatory.

I should like to hear from Mr. Lauder and the other speakers about the incidence of nephritis in cats.

I am a little disappointed that no mention has been made of nephrosis of clinical significance, because these cases do occur. They do give abdominal symptoms and the urine picture is entirely different from nephritis.

I am somewhat disappointed, also, that the heading referred to "urine analysis"; it is, in fact, just a method of making individual tests rather than a complete analysis, because in a complete analysis one should have colour, specific gravity and reaction, and even microscopical examination of deposits.

I should like to ask Mr. Lauder what particular iodine containing media he used in urography; what degree of susceptibility to iodine reaction is there, and what tests can be carried out to test this in order to avoid unpleasant reactions?

I hoped, in addition to the highly scientific aids to diagnosis, radiography, urine analysis, blood smears, and so on, some speakers would have paid attention to clinical observation, to the very simple aids to diagnosis in abdominal diseases, that is finding the types of pain you get in abdominal diseases, the different smells, and the different expressions. I think the expression of a sick animal is very helpful and illuminating. I find with pain in the stomach you will get an unnatural posture, sometimes emitting grunting noises on palpation, at times giving the impression that the entire liver area is affected, yet by gently pressing one's hand on the abdomen and keeping it there one can localise the pain. That kind of co-operation with your patient is an extremely valuable way; very often they will relax and you can localise the pain to one particular organ.

In liver cases I do not often find pain unless there is acute congestion, or neoplasia.

In kidney cases there is a centre of pain in the lumbar region, occasionally synonymous with rheumatic conditions of the paraplegia type, or even inter-costal or abdominal neuritis.

In regard to the smells, there are (*a*) the one very characteritic of uraemia of the chronic cases (the one like bad fish); (*b*) the gastritis smells, or rather the symptoms of stomach derangement, are very heavy and sickly, rather like bad fruit; and (*c*) the tonsillar smells, which can be sickly but sweet—almost pus-like. Then the actual expressions; there again, when you are dealing with abdominal diseases you must look at the dog from head to tail. The typical kidney expression is a very heavy, hopeless, dull look, like "the end of the world has come and I don't care" type. In stomach cases the eyes are often shifty; liver cases are quite dull and expressionless. There are a whole host of other expressions which are extremely helpful; this may not be highly scientific, but, at any rate, clinical observation is important aid to diagnosis.

The Chairman: I am afraid we have not time for any further discussion; in fact, we have not time for even Mr. Lauder or the other openers to respond to the criticisms or remarks made. We suggest that these answers be made in writing later in *The Veterinary Record*. Mr. Lauder is just going to make a very brief summary. I think it would be your wish that I should thank Mr. Lauder, Miss James and Mr. Heney for the enormous task they have taken on.

I know there has been some criticism as to the magnitude of the subject, but it is difficult to get busy clinicians to tie themselves down to one particular subject. We will, however, bear the criticism in mind and perhaps do something about it next year.

Mr. Lauder: We have not time to answer the various questions raised, but I would like to take this opportunity to reply to Dr. Evans. I was pleased to hear his contribution because we are always glad to hear from our medical colleagues; we always learn something from them and they seem to be just a little step ahead of us. I personaly work in very close co-operation with my local hospital; I get a tremendous amount of help and information from them and on occasions I can even help them. I think we could co-operate with the hospitals a lot more than probably we do.

With regard to Dr. Evans' reference to duodenal ulcers, I wonder whether the acid media in the stomach is all that is required for duodenal ulcers. I personally think the nervous system plays a very large part, and in animals that nervous fear does not occur to the same extent as in the human being, who is worried about various things.

I will endeavour to reply to the other remarks in *The Veterinary Record*. (Applause.)

The Chairman: I would thank Mr. Lauder and all the other speakers who have contributed remarks; would you please show your appreciation in the ordinary way. (Applause.)

The Reply

Following is the detailed reply to the discussion submitted subsequently by Mr. Lauder:—

I would like to thank those who have taken part in the discussion for their interesting remarks, and for having dealt so leniently with the paper; also to congratulate both the openers on the excellence of their contributions.

To Miss James I have very little to say, except perhaps to remark that my experience with cases of everted and prolapsed uteri has been somewhat different from hers. I find this to be an extremely rare condition and I have not had a case for years. I am also surprised at her dissatisfaction with X-rays in the diagnosis of foreign bodies. I have always found X-ray opaque bodies to be clearly visible on plain films. If, however, the foreign body is non-opaque to X-rays, the administration of a barium meal will cause the barium to adhere to the foreign body, making it clearly visible many hours after the main barium meal has passed down the intestinal tract.

In reply to Mr. Heney, I would like to say that I consider the administration of a barium meal has a definite beneficial effect on the inflamed mucous membrane of the intestinal tract. In cases of duodenal ulcer in man, the subjection of the patient to a barium meal X-ray produces alleviation of symptoms very often for a considerable period, as I can vouch for from personal experience. Chronic nephritis, I agree, is by far the commonest manifestation of kidney disease, but in my experience the terrier group is no more susceptible to chronic nephritis than any other breed. I am very interested in the statement that albuminuria decreases as the disease progresses. I shall take note of this in future. I am very much intrigued by Mr. Heney's reference to his use of the peritoneoscope. I have seen this instrument and immediately realised its tremendous advantages in small-animal diagnosis, but the prohibitive cost—in the region of £150—has always precluded my use of it. Apparently our colleagues across the water are in a better position to afford such instruments than I.

I was very pleased to hear the contribution from Dr. Garfield Evans. I feel that we in the veterinary profession can learn a lot from our medical colleagues—also on occasions teach them something—and I have received valuable assistance from my local hospital on many occasions. With regard to Dr. Evans' enquiry regarding duodenal ulcers in dogs, I feel that the acid content of the stomach is not the only factor necessary for ulcer production. I am sure Dr. Evans will agree with me when I say that I feel sure that many ulcers in humans are of nervous origin, a factor that does not operate in dogs and cats. Retrograde pyelography, which produces excellent radiographs in the human subject, is not possible in the dog owing to the impossibility of passing the catheter into the dog's ureter. Thus we have to depend on intravenous injections of radio-opaque materials which are excreted through the kidneys. I have never investigated the possibility of worms, coated with barium, being visible in the intestinal tract. It holds out interesting possibilities.

Mr. H. Raynor Hewetson deprecates the use of X-rays as a short cut to diagnosis. I thoroughly agree with him, and I always regard radiology as an adjunct to a careful clinical examination. On examining an X-ray film it is extremely easy to imagine one

sees an abnormality, and I must emphasise the necessity of making a close comparison with normal X-ray films.

Dr. Spreull's demonstration of spinal anaesthesia in the dog and cat has certainly drawn our attention to the great possibilities of its use as a means of obtaining complete relaxation of the abdominal muscles. I am afraid I cannot agree with Mr. Hewetson's remarks about the temperature reaction in feline enteritis. I always regard the elevation of temperature as a preliminary symptom of great importance.

The case of suspected renal colic described by Mr. Hewetson brings to mind several cases of a similar nature that I have encountered. I am afraid I was unable to make an accurate diagnosis and the conditions cleared up spontaneously—presumably due to the passage of the calculi.

Miss Uvarov has given us the type of constructive criticism that we have come to expect from her, and I am very glad to hear it. Had time permitted further discussion I am sure we would have received enlightening descriptions of the smells described by Miss Uvarov. The various types of smells that one encounters in practice, while they are useful to oneself in making a diagnosis, are extremely difficult to describe on paper. The type of smell that I associate with nephritis is a necrotic or pus-like odour, and in many cases is due to the presence of necrotic ulcers on the edges of the lips. The smoky colour of the urine in acute nephritis is due to the presence of blood which may arise from minute haemorrhages in the glomeruli or in the tubules. I am afraid I have no information regarding the incidence of chronic nephritis in cats, but I imagine it must be fairly high. I omitted any reference to nephrosis, as I have not encountered many cases, and, as I stated in my opening remarks, I had to omit a great number of the less common conditions. With regard to urography, I have mainly used "Uriodone forte" (M & B), and I have had no indications of iodine poisoning. In a few cases in cats I have given the adult human dose intravenously without any ill-effects. In the normally functioning kidneys X-ray shadows should appear in about 15 minutes.

ADDRESSES OF DISEASE-INFECTED PREMISES

The list given below indicates, first, the country in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

Swine Fever:

Cumberland.—Beck Brow, Whitrigg, Kirkbride, Carlisle (Nov. 13th); Croft End, Blackford, Carlisle (Nov. 16th).

Derbyshire.—Coneygreave Farm, Ashleyhay, Belper (Nov. 13th); Bailey Bros., Foremark, Derby (Nov. 14th); Rose Cottage, Water Lane, Middleton, Wirksworth, Derby (Nov. 17th); Littlecroft, Barrow-on-Trent, Derby (Nov. 18th, 1950).

Dumfries.—South Hayrigg, Dryfesdale, Lockerbie (Nov. 15th).

Durham.—Stella House, Springwell, Gateshead (Nov. 13th).

Edinburgh.—17 Holding, Wester Hailes, Slateford, Edinburgh (Nov. 18th, 1950).

Fife.—4, Holding, West Pitcorthie, Anstruther (Nov. 13th).

Lancs.—174, Yew Tree Road, Fallowfield, Manchester (Nov. 11th).

Lincs (Lindsey).—Willowdene Farm, Friskney, Boston (Nov. 18th, 1950).

Northumberland.—4, Statyford Lane, Denton Burn, Newcastle-on-Tyne (Nov. 13th); Lynacres Farm, Wark, Hexham (Nov. 15th).

Notts.—The Bungalow, Clipstone Drive, Forest Town, Mansfield, Notts (Nov. 11th); 31, Mason Street, Sutton-in-Ashfield (Nov. 15th).

Yorks (W.R.).—Station Farm, Church Fenton, Tadcaster; 86, Mexboro' Road, Bolton on Dearne, Rotherham (Nov.13th); 99, Clarke Lane Allotments, Leeds, 9 (Nov. 14th); Manor Farm, Throapham, Dinnington, Sheffield (Nov. 16th); 6, Friarwood Terrace, Pontefract. (Disease at Baghill Allotments, Pontefract (Nov. 16th); Church Farm, Altofts, Normanton, Yorks; Queen Street West Allotments, Swinton; New Building Farm, Balby Carr, Doncaster (Nov. 18th, 1950).

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Weekly Wisdom

The real question is how a strong government, which the dangers facing democratic freedom everywhere necessitate, can avoid overwhelming the liberties which it is trying to defend or demoralising the community which it is seeking to serve.—The Bishop of Southwell (maiden speech in the House of Lords).

A PRELIMINARY NOTE ON RESISTANCE TO TREATMENT AS SHOWN BY A STRAIN OF *T. CONGOLENSE* IN THE BUKOMERO DISTRICT OF UGANDA

BY

S. G. WILSON,

Kabete, Kenya

Infection of cattle herds with *Trypanosoma congolense* has existed in the Bukomero district of Buganda for many years. One source of infection is occasional *Glossina pallidipes* dispersion from the adjacent fly belt, but mechanical infection by the prevalent *Stomoxys* flies also occurs.

The mortality rate, which was serious at one time, has become much reduced since the introduction in 1946 of the regular treatment of infected herds with dimidium bromide at the rate of 1 mg. per kg. estimated live weight.

On December 3rd, 1949, citrated blood was collected separately from three infected cattle in this area and inoculated on the same day at the Veterinary Laboratory, Entebbe, into three experimental cattle Nos. 5741, 5746 and 5759, each animal receiving 100 c.c. citrated blood subcutaneously. None of these experimental cattle had previously had trypanosomiasis nor had they been treated with any trypanocidal drug. Since each experimental animal was inoculated with blood from a separate infected animal, the number of trypanosomes injected into each animal was not constant and the incubation periods therefore varied.

Bovine No. 5741 showed *T. congolense* in daily thick blood smears from the ninth day until death on the 76th day after inoculation.

Bovine No. 5746 showed *T. congolense* 21 days after inoculation and when treated subcutaneously on the 31st day with antrycide dimethylsulphate at 0·5 mg. per kg. blood smears did not become negative until four days later and the animal relapsed 16 days after treatment.

Bovine No. 5759 showed *T. congolense* 18 days after inoculation and when treated on the 31st day with antrycide dimethylsulphate at 1 mg. per kg. trypanosomes disappeared on the third day but reappeared on the 13th day after treatment. Both Nos. 5746 and 5759, when re-treated with 5 mg. per kg. antrycide dimethylsulphate on February 10th, 20 and 23 days respectively after they had relapsed, appeared to be cured in that there was an improvement in their clinical condition and no trypanosomes were found in daily thick blood smears for 12 weeks after re-treatment.

Previous work at Entebbe with "Busimbi" and "Mubende" strains of *T. congolense* has shown that 0·5 mg. per kg. and 1 mg. per kg. of antrycide dimethylsulphate had cured all infected cases. The apparent resistance of the "Bukomero" strain as shown in animals 5741 and 5759 appeared to merit further investigation. On January 19th, 1950, ten cattle were therefore infected by subcutaneous inoculation of whole blood direct from Bovine No. 5741, *i.e.*, with a "Bukomero" strain of *T. congolense* not as yet in contact at the laboratory with a trypanocidal drug. When infected, four of these animals were treated with dimidium bromide and six with antrycide dimethylsulphate, subcutaneously at varied rates of dosage. Details of this experiment are given in Table I. (*overleaf.*)

Trypanosomes disappeared from the blood stream of bovines Nos. 5757 and 5758 24 hours after treatment; in all other cases they did not disappear until 48 hours after treatment. When the six animals in Groups A to C relapsed trypanosomes were constantly found in thick blood smears

TABLE I

RESULTS WHEN TEN BOVINES WERE INFECTED ON JANUARY 19TH, 1950, WITH *T. congolense* "BUKOMERO" STRAIN BY SUB-INOCULATION AND TREATED ON FEBRUARY 1ST, 1950

Group	Bovine No.	Date blood smears positive	Details of treatment on February 1st	Result
A	233	Jan. 27th	1 mg. per kg. D.B. i/m	Relapsed 4 days after treatment.
	5742	25th	"	Relapsed 6 days after treatment.
B	5743	27th	2 mg. per kg. DB i/m	Relapsed 11 days after treatment.
	5745	25th	"	Relapsed 12 days after treatment.
C	5748	25th	1 mg. per kg. DMS sub/cut.	Relapsed 12 days after treatment.
	5749	25th	"	Relapsed 12 days after treatment.
D	5753	26th	2 mg. per kg. DMS sub/cut	Relapsed 6 days after treatment.
	5755	25th	"	Relapsed 13 days after treatment.
E	5757	25th	3 mg. per kg. DMS sub/cut.	Relapsed 14 days after treatment.
	5758	29th	"	Relapsed 19 days after treatment.

DB = Dimidium bromide (Phen. 1553); DMS = Antrycide dimethylsulphate; i/m = intramuscularly; sub/cut. = subcutaneously.

bromide and the strain also showed considerable resistance to antrycide dimethylsulphate. It would also appear from Table II that 3 mg. per kg. of antrycide dimethylsulphate was approaching the dosage level necessary for cure and animals in these groups when immediately re-treated with antrycide dimethylsulphate at 5 mg. per kg. on February 23rd apparently were cured.

Since on re-treatment with 5 mg. per kg. of antrycide dimethylsulphate no relapses occurred in Group A in comparison with one relapse in Group B, the original drug resistance would appear to be more evident when relapse occurred after treatment with 2 mg. per kg. than after treatment with 1 mg. per kg. dimidium bromide. A comparison of relapses occurring in Groups C, D and E, however, shows that the converse is true with antrycide dimethylsulphate, in that relapses occurred only after treatment with 1 and 2 mg. per kg. and not after primary treatment with 3 mg. per kg. The number of animals in each group, however, is too small to permit definite conclusions.

There is little evidence as to how the drug resistance first arose in this particular strain of *T. congolense*. When dimidium bromide was first used in this area in 1946, results were most satisfactory in that mortality in infected herds decreased significantly. Treatment, however, at the rate of 1 mg. per kg. is not likely to effect more than a 84 per cent. cure (Wilson, 1948). Estimations of live weight in the field cannot be precise and African Field Assistants are more likely to underdose than over-dose in order to avoid any clinical complication from "photosensitisation." Conditions therefore could be favourable to the production of drug resistance. The cross resistance to "antrycide" is what one would expect from earlier work (Wilson, 1949a, b). We do not yet know how widespread these resistant strains may be in Uganda, nor

TABLE II

RESPONSE SHOWN BY 2 ANIMALS (GROUP D) AFTER TREATMENT WITH 2 MG. PER KG. ANTRYCIDE METHYLSULPHATE AND 2 (GROUP E) AFTER TREATMENT WITH 3 MG. PER KG. ANTRYCIDE METHYLSULPHATE ON FEBRUARY 1ST, 1950

Group	Bovine No.	February 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
D	5753	+	+	+(1)	—	—	—	—	+(1)	VS	—	—	—	—	VS	+	+	VS	+(1)	—	—	—	—	—	—
	5755	++	+	—	—	—	—	—	—	—	—	—	—	—	VS	+	+	+	VS	+	+	S	+	+	VS
E	5757	++	+	—	—	—	—	—	—	—	—	—	—	—	—	VS	+	+	—	—	—	—	VS	+	VS
	5758	++	+	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	VS	S	—	—	—

VS = Very scanty; S = Scanty; (1) = Only one trypanosome found in blood smears on that day.

from the first day of relapse and usually in considerable numbers. When the four animals in Groups D and E relapsed (Table II) the trypanosomes were usually scanty in thick blood smears at first and except in animal No. 5755 disappeared altogether for several days in succession only to reappear.

On February 23rd, when all the animals showed trypanosomes in blood smears except Nos. 5753 and 5758, they were all treated subcutaneously with antrycide dimethylsulphate at the rate of 5 mg. per kg.

After this further treatment the four animals in Groups A and E appeared to be cured in that daily thick blood smears were negative 24 hours after re-treatment and remained negative throughout March, April and May. One animal relapsed in each of the other groups, *i.e.*, No. 5743 on the 28th day, No. 5749 on the 29th day and No. 5755 on the 26th day after re-treatment.

These results showed that the "Bukomero" strain of *T. congolense* was resistant to the usual field doses of dimidium

will they be revealed easily if the field dose of 5 mg. per kg. antrycide methylsulphate is used consistently. Their existence, however, will make the ultimate production of highly drug-resistant strains more rapid and more certain.

The following experiment was carried out to test the prophylactic value of a subcutaneous dose of 5 mg. per kg. antrycide dimethylsulphate when animals were subjected to infection with the "Bukomero" strain. Three groups of non-infected animals were treated at this rate of antrycide dosage and challenged two, four and seven weeks later with blood from animal No. 5741: results are summarised in Table III.

The protection afforded by a 5 mg. per kg. dose of antrycide dimethylsulphate was partially effective when animals were challenged two weeks after dosage and this lends support to the opinion deduced after re-treatment of animals Nos. 5746, 5749 and animals in Group E, Table I, that infection due to this "Bukomero" strain of *T. congolense* could be cured by dosage of 5 mg. per kg. antrycide dimethylsulphate. When

TABLE III

EXPERIMENT TO SHOW THE PROPHYLACTIC VALUE OF 5 MG. PER KG. ANTRYCIDE DIMETHYLSULPHATE WHEN ANIMALS WERE SUBJECTED TO INFECTION WITH "BUKOMERO" STRAIN OF *T. congolense* 14, 28 AND 49 DAYS LATER

Bovine No.	Days after treatment challenged 20 c.c. whole blood ex No. 5741	Result
5761	14th, 15th, 16th days	No infection.
5762	14th, 15th, 16th days	Positive *T. congolense from* 59th day onwards.
5763	14th day only.	Positive *T. congolense* 48th day only.
5764	14th day only.	No infection.
5713	28th, 29th, 30th days.	Positive *T. congolense* 13 days after challenge.
5747	28th, 29th, 30th days.	Positive *T. congolense* 35 days after challenge.
5744	28th day only.	Positive *T. congolense* 16 days after challenge.
5760	28th day only.	Positive *T. congolense* 26 days after challenge.
70	49th, 50th, 51st days	Positive *T. congolense* 10 days after challenge.
128	49th, 50th, 51st days	Positive *T. congolense* 7 days after challenge.
8	49th day only.	Positive *T. congolense* 11 days after challenge.
5639	49th day only.	Positive *T. congolense* 13 days after challenge.

animals were challenged four and seven weeks after dosage of 5 mg. per kg. there was a lengthening of the incubation period in some cases but no ultimate protection from infection. When animals were challenged either on one day only or on three successive days, there was no significant difference in the days on which relapses occurred.

SUMMARY

In a preliminary experiment to test the response of a recently collected field strain of *T. congolense*, named the "Bukomero" strain from its district of origin, a cure was not effected by doses of 0·5 mg. per kg. and 1 mg. per kg. antrycide dimethylsulphate.

A subsequent experiment proved that this strain was resistant both to 1 and 2 mg. per kg. dimidium bromide and to 1, 2 and 3 mg. per kg. antrycide dimethylsulphate.

Relapses following treatment with 1 mg. per kg. dimidium bromide and 3 mg. per kg. antrycide dimethylsulphate were clinically cured by immediate re-treatment with 5 mg. per kg. antrycide dimethylsulphate. Relapses following re-treatment occurred in all other groups.

The available evidence suggests that drug resistance arose through repeated re-treatment of infected cattle in the Bukomero district with dimidium bromide at the rate of 1 mg. per kg.

When non-infected animals were treated with 5 mg. per kg. antrycide dimethylsulphate and challenged two weeks later with the "Bukomero" strain, only two animals out of four were protected. There was no protection when animals were challenged four and seven weeks after treatment.

The criterion of cure was that trypanosomes disappeared from the blood stream after treatment and remained absent for 10 to 12 weeks and the clinical condition of the animal consistently improved. No work was done to test the possibility that cryptic infections may have been produced.

Further work is necessary to show how prevalent in Uganda these resistant strains may be and how they have been produced.

This paper is published with the permission of the Director of Veterinary Services, Uganda. I am also grateful to Dr. Taylor for sending me the results of blood examination during March and April.

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CLINICAL COMMUNICATION

THE USE OF AN ANTIHISTAMINE DRUG IN A CASE OF TYMPANY

E. N. SCHWABACHER, M.R.C.V.S.,

RICKMANSWORTH

Any case in which an acute condition receives spontaneous relief seems worthy of record. The subject of the following account was a two-year-old Pekinese bitch which the owner reported as having been taken acutely ill.

When seen, the animal was panting with marked salivation and was obviously distressed. On palpation the upper abdomen was tense and painful, resonant to percussion over the whole epigastric area. The heart rate was rapid, exceeding 150 per minute. No physical signs or symptoms were found in the chest or central nervous system. The temperature was not significantly raised, 101·8° F.

TREATMENT

August 4th, 1950.—At 8 p.m. a small stomach tube was passed easily and flatus escaped. 0·5 ml. of 0·01 per cent. carbaminoylcholine chloride was given subcutaneously in the hope of giving tonus to an atonic gastric muscle wall. The animal was seen again at 9 p.m. This time it was in a state of complete exhaustion, the symptoms and findings of an hour ago having recurred. It received 1·0 ml., 0·05 G phenergan intramuscularly, it being believed that here might be a case of aerophagy, with spasms of the gastric sphincters. How else in so short a time could air collect in the stomach and not again be voided? Within seven minutes of the injection the tympany was relieved, respirations became normal and milk was lapped up.

August 5th.—The animal passed one diarrhoeic stool, showed slight discomfort due to gastric distention, but had improved greatly in comparison with the previous day. A carminative and light diet was prescribed; the latter consisted of white fish, white of egg, milk and bone extract.

August 8th to 11th.—The acute distention recurred three times and each time was alleviated by 1 ml. phenergan. It was observed that the time taken for relief to become manifest after the injection took longer on each occasion—10, 30 and 60 minutes respectively.

August 11th to 14th.—Phenergan, one tablet (0·01 gm. per tablet) was given three times a day. (The elixir of phenergan tried on August 12th was not as satisfactory as the tablet therapy).

August 14th to 21st.—The dosage was reduced to two tablets a day, after which the drug was discontinued. Since then (14 days) the animal has remained well.

A barium meal and X-ray examination on August 10th failed to show the presence of neoplastic disease or a foreign body. Repeated occult blood tests, August 7th, 8th and 9th,

were negative. Faecal cultures failed to yield a growth of *Salmonella* and *Shigella* organisms.

Discussion

The common causes for tympany, such as foreign body, food poisoning, obstruction, intussusception, were excluded in this case. The manner in which the gases collected in the stomach has not been ascertained, but it is obvious that the effect of the antispasmodic phenergan therapy allowed one or both of the gastric sphincters to relax and the flatus to disperse. The distressing condition, whether allergic or functional, maintained over a period of time, was serious enough to embarrass both the respiratory and cardiac systems. The loose stool is suggestive that an antigen of unknown origin caused alimentary irritation with histamine production, the latter resulting in gastric sphincter spasm and possibly respiratory and cardiac embarrassment.

Conclusion and Summary

Anti-histamine therapy may be of help in any spasmodic condition.

A case of acute tympany in a pekinese is reported. The condition responded to phenergan therapy.

Acknowledgments.—I wish to express my thanks to Mr. Anderson, M.R.C.V.S., of Messrs. May & Baker, for his interest in this case, and to the Laboratories at Watford for their investigations.

ABSTRACTS

[An Inactivated Vaccine Against Newcastle Disease. [Authors' Summary.] Doyle, T. M., & Wright, E. C. (1950.) *Brit. Vet. J.* **106.** 139.]

An inactivated tissue vaccine against Newcastle disease is described. It is prepared from finely minced chick embryos suspended in crystal violet-ethylene glycol; glycerine can be used in place of ethylene glycol. Most of the vaccine has been prepared from either "Herts" or "Turkey" strains of virus. Nothing was previously known of the immunogenic value of these strains; they were used because they were available at the Institute. Both strains proved satisfactory, but it may be that further search would reveal others of higher immunogenic value. Twenty-two batches of vaccine have been prepared, and 20 of these were of satisfactory potency. One batch prepared with a living, avirulent strain of virus failed to confer protection; this strain, when used unmodified, caused no symptoms in fowls and conferred a solid immunity. The immunogenic value of the strain of virus used in the production of vaccine is probably of cardinal importance. A point that requires examination is the suitability for vaccine production of virus that has been propagated over a long period on eggs. The "Herts" egg-passage virus has apparently lost its invasiveness for fowls by contact; it might be found advantageous to pass the virus occasionally through fowls. Immunity is established about seven days after vaccination. The duration of immunity has not been fully estimated, but it persists for at least 12 months. The vaccine does not cause any reaction, paralysis or check in growth. Numerous tests have proved that vaccinated fowls are incapable of transmitting infection to susceptible in-contacts. It can be used safely on chicks from six weeks of age; there was some evidence that ethylene glycol was slightly toxic for chicks under one month of age; this point was not, however, fully examined. In one small test on turkeys the vaccine gave satisfactory results. The vaccine gives rise to virus neutralising antibodies, but does not induce a positive H.I. reaction—which is a considerable advantage, as it will not interfere with the use of the H.I. test for the detection of naturally infected fowls. No controlled tests were made to determine the effect of vaccination on egg production, but from casual observation it did not appear to have any adverse influence. A fact of considerable practical importance is that the vaccine retains its potency for about five months in cold storage (2° to 4° C.); this should be regarded as the maximum period.

Comparative tests on eggs and fowls to determine the point of inactivation of the virus in vaccine during incubation showed that the egg test was the less reliable; the failure of the egg test was probably the result of interference in the allantoic sac between inactivated virus and the propagation of the residual active virus. The greater accuracy of the fowl test depended, no doubt, to some extent on the larger inoculum used.

J. G. C.

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[Pharmacological Action of Antihistamine Compounds. Burn, J. H. (1950.) *Brit. Med. J.* No. 4681. p. 691.]

Antihistamine compounds belong to a large group of drugs that possess common properties at first sight not directly connected with that action for which they are used in therapeutics. These side-actions are clearly of the greatest importance. The actions common to the drugs in this large group are local anaesthesia, analgesia, spasmolysis and the property of prolonging the refractory period of heart muscle.

The antihistamine drugs share properties with well-known drugs like procaine, pethidine, atropine and quinidine; that is to say, antihistamine compounds can be used as local anaesthetics, as quinidine substitutes for fibrillation, as quinine substitutes for myotonia, for travel sickness and to relieve pain. Similarly, local anaesthetics such as procaine, or analgesics such as pethidine have an antihistamine action which is considerable.

The basis of these common properties is that the substances which possess them depress the effects of acetylcholine, histamine and adrenaline; these substances control activity locally in many tissues.

G. F. B.

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[Methods for Egg Counts and Larval Cultures for Strongyles Infesting Cattle. Roberts, F. H. S., & O'Sullivan, P. J. (1950.) *Aust. J. agric. Res.* **1.** 99–102.]

A new egg counting technique is described which records counts as low as ten eggs per gramme.

The method is based on a Whitlock-Gordon egg counting slide, having four cells, each measuring 20 mm. × 10 mm. × 2·5 mm., and holding 0·5 cc. A 3-gramme faecal sample is macerated in 17 c.c. of water, to which is added 40 c.c. of brine, making a total volume of 60 c.c. A sample of the mixture is then transferred to the slide, and four cells are counted. The total number of eggs is multiplied by ten to give eggs per gramme.

Details are also included of a method of faecal culture for larval identification, which overcomes the difficulties associated with the high moisture content and density of bovine faeces. Dried pads of cattle dung are exposed to a temperature of 140° C. for four hours, and then minced. The dried dung is added to 30 to 40 grammes of the faeces for culture, until a moist, crumbly mixture is achieved. This mixture is placed to a depth of 2 in. in a jar, and exposed to a temperature of 26° to 28° C. for eight days. The jar is then completely filled with water and inverted into a petri dish which is subsequently half filled with water. The apparatus is left over-night and the larvae migrate into the petri dish.

D. W. J.

REVIEW

[" Die Biochemischen Grundlagen der Tiernahrungslehre." Professor Karl Scharrer. (Ferdinand Enke, Stuttgart, 1950. Price 14 Marks.)]

Within the space of 156 pages of text, this volume deals fairly satisfactorily with the biochemical basis of animal nutrition. The first three-quarters of the book are devoted to descriptions of the properties and metabolism in the animal body of carbohydrates, fats, proteins, enzymes, vitamins and minerals. In the subsequent 15 pages, the composition of foods, digestible nutrients, albuminoid ratio, and balances of matter and of energy are discussed. One questions whether it is desirable to give practical details for *five* methods of determining crude fibre in so condensed a section as this. The last part of the book, dealing with the various methods which have been used for the assessment of the nutritive values of foods, is perhaps the best.

It is not a well-balanced book with regard to references to original work, three-quarters of its 120 references being to German publications. In other respects it also shows a similar bias: for example, the three pages it devotes to synthetic fats, derived from fatty acids which have been obtained by the oxidation of hydrocarbons, must count as one of the best summaries the reviewer has seen, but one questions the significance of this subject matter in a course of animal nutrition.

The book is paper-backed, but the printing is good, with formulae and tables clearly set out. Whether the space devoted to structural formulae for the chlorophylls is worth while in such a volume is doubtful. One should not now expect to find reference to the existence of soaps in the intestine, while it is surely time that the name " vitamin F," as a synonym for the essential fatty acids, should be allowed to lapse by its omission from text-books. In the section on vitamins one finds mention of the still doubtful B_3 B_4 and B_5, but biotin is given solely under the heading vitamin H. Pyridoxine is listed, but there is no mention of pyridoxal and pyridoxamine, nor of vitamin K.

There are other signs of incomplete editing or preparation of the book. On p. 78, in both the text and the reference at the foot of the page, two eminent American workers are teamed up as " Burroughs-Mitchell." Only in a foot reference on the following page (a reference, incidentally, to the same papers as the previous one) do they resume separate and independent existences.

While the volume is satisfactory in many ways, much more than its fundamental biochemistry is already dealt with in the existing texts used by veterinary students in their biochemical and physiological courses. On the other hand, the rest of the volume, relating more specifically to foods and feeding standards, is covered much more comprehensively by English and American publications. One must regret, too, that no attempt has been made to view growth, reproduction, etc., from the more recent aspects of biochemical dynamics, for these are now sufficiently well established to be included with the fundamental bases of nutrition.

A full-size reconstruction of an old wheelwright's shop has been put on view as a permanent exhibit at the Science Museum, South Kensington. It is shown in the Children's Gallery, but its interest is as great for the adult as for the young.

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The Governor of Northern Ireland, Cabinet Ministers and other distinguished guests attended the "coming-of-age" celebration of the Young Farmers' Clubs of Ulster. There are now well over 100 of these clubs, with a total membership exceeding 10,000.

VICTORIA VETERINARY BENEVOLENT FUND

MEETING OF COUNCIL

A meeting of the Council of the Victoria Veterinary Benevolent Fund was held at No. 10, Red Lion Square, London, W.C.1, on Thursday, October 12th, 1950, when the following members were present: Lieut.-Colonel P. J. Simpson (President) in the chair, Mrs. D. I. Glover, Messrs. G. N. Gould, Arnold Spicer, Mrs. E. B. Wooldridge and Professor G. H. Wooldridge. Mr. C. W. Francis, Secretary, was in attendance.

Minutes.—The minutes of the previous meeting, held on June 28th, 1950, having been published, were taken as read and signed as correct.

Apologies for Absence.—Apologies for absence were received from Professor J. B. Buxton, Major J. J. Dunlop, Professor R. E. Glover, Mr. John Holroyd, Captain W. R. McKinna, Professor W. M. Mitchell, Captain J. W. Procter, Mrs. Alex. Thomson (President, Ladies' Guild), Captain A. Whicher, Dr. W. R. Wooldridge and Major W. H. Wortley.

Correspondence.—A letter dated August 16th, 1950, from the Australian Veterinary Association. This referred to the parcels of food which they had had the pleasure of sending to addresses nominated by the V.V.B. Fund during the past few years and stated that as the situation in Great Britain was obviously improving, their general organisation was being wound up and that in consequence such despatch of parcels would cease when the funds now in hand were expended. The letter also expressed the good wishes of the Association to the Members of the R.C.V.S., who so ably administered the Victoria Veterinary Benevolent Fund.

On the proposition of the President, seconded by Mr. G. N. Gould, it was unanimously resolved:—

" That this Council, being deeply touched by the generosity of the Australian Veterinary Association in despatching welcomed food parcels during the past four years to cases brought to their notice by this Fund, do record its immeasurable thanks to the members of the Association for their practical sympathy by contributing so handsomely towards the fund which made the sending of such parcels possible."

It was further resolved:—

" That in transmitting a copy of this resolution to the Secretary of the Australian Veterinary Association, the President be requested to include this Council's appreciation and warm thanks to the Association for their good wishes."

Accountant's Report

The following report of the Accountant was read and adopted:—

Since the previous Quarterly Meeting of Council, the following special subscription and donations have been received:—

	£	s.	d.
Subscription			
V.V.B.F. Ladies' Guild	300	0	0
Donations			
Eastern Counties (Shipley Bowls Competition)	4	10	0
Anonymous		10	6
National Greyhound Racing Association ...	5	0	0
Mrs. M. E. Shave (in memory of Professor E. S. Shave)	2	2	0
H. Stainton (Richmond Dog Show)	15	15	0
A. Whicher (in memory of " Mac ")	1	11	6
	£29	9	0

Christmas Fund

H. Stainton (Croydon Dog Show)	5	5	0
V.V.B. Fund Ladies' Guild	500	0	0
	£505	5	0

(*a*) The Secretary was instructed to express the grateful thanks of the Council to the V.V.B.F. Ladies' Guild for their most generous contributions and also to the other donors.

(*b*) A proposition by Mrs. D. I. Glover, seconded by Mrs. E. B. Wooldridge, that in connection with the £500 donated to the Christmas Fund by the Ladies' Guild half be distributed at Christmas and the other half at the end of June, 1951, was put to the meeting and unanimously adopted.

Cases

No. 132. M.R.C.V.S. in hospital, and wife, aged 52, uffering from ill-health. Three children, ages 29, 28 and 27.

The Executive Committee reported that having received a distressing letter from this member's wife, dated August 25th, it had made an immediate grant of £10 to help her in her serious financial difficulties.

The Secretary also read an application for assistance, submitted on August 29th, 1950.

It was resolved: "That the action of the Executive Committee be approved, and that a further grant of £10 be made in this case."

No. 276. Widow, aged 64. The Secretary reported that the Solicitors acting on behalf of this widow had now heard from the other Bodies to which they had applied for assistance. After hearing details of the help proposed to be given by these Institutions, it was resolved: "That in view of her present financial position no action be taken but should any change in her circumstances occur, the case be further reviewed."

Date of Next Meeting.—It was agreed that it be left in the hands of the President to arrange the next meeting some time during January, 1951.

IN PARLIAMENT

Slaughter of Animals for Food

In the House of Lords, on Thursday of last week, Lord Dowding called attention to some aspects of the slaughter of animals for food, and moved for papers.

He said the outstanding instance at present was the unnecessary suffering inflicted on animals killed outside slaughterhouses on farms and private property. The number was thought to be nearly 450,000 a year, mostly pigs. There was no law which prevented these animals being knifed in full consciousness, and this was the fate of most of them. This was a blot on our humanity and civilisation. The use of the captive bolt pistol or some approved stunning apparatus should be made compulsory.

The Earl of Huntingdon, Parliamentary Secretary, Ministry of Agriculture, said neither the Government nor their officials were callous in this matter. The real objection to the compulsory use of the humane killer was that it was impossible to enforce; an inspector could not be sent every time an animal was to be slaughtered at a remote farm. However, the Ministry of Food would, in future, attach to all licences sent out to self-suppliers a slip showing where a humane stunner could be obtained. The real solution of the problem was increased man-power and reasonable premises. The Ministry of Food was discussing with the R.S.P.C.A. conditions in some slaughterhouses.

The motion was, by leave, withdrawn.

Questions

Cattle (Slaughtering Arrangements)

Lieut.-Colonel Sir Thomas Moore (November 15th) asked the Minister of Food whether in view of the increasing numbers of cattle awaiting slaughter and the congestion that results, with its consequent suffering to the animals, he will arrange for more slaughterhouses to be built without delay.

Mr. Webb: I would refer the hon. and gallant Member to the reply I gave to the hon. Member for Bodmin (Mr. D. Marshall) on Monday, November 6th.

Sir T. Moore: While not having access to that answer, as no doubt the Minister has—which is something to which I have drawn attention before—will he bear in mind that there are now only 600 slaughterhouses compared with 16,000 before the war? Therefore, how can there not be congestion and consequent suffering? Will he remove some of the restrictions that he has imposed?

Mr. Webb: There were not 16,000 slaughterhouses before the war, but 12,000, and some of these backyard slaughterhouses could just not bear examination.

Mr. Assheton: Will the right hon. Gentleman bear in mind that a great deal of suffering is caused to animals by their having to travel long distances? Will he do his best to alleviate the situation?

Mr. Webb: That is another question, but I am looking into it.

Mr. Harrison: Before my right hon. Friend gives permission for the building of any more slaughterhouses, will he take a look at some of the slaughterhouses that were used prior to and in the early part of the war?

Sir W. Smithers asked the Minister of Food if he has considered particulars which have been sent to him concerning cruelty to animals and waste due to slaughtering of beasts under Government control; and if he will restore the right to butchers to do their own slaughtering.

Mr. Webb: I am having inquiries made about the information which the hon. Member has sent to me and will write to him as soon as possible, but I cannot accept the implication in his Question. On future slaughterhouse policy, I would refer the hon. Member to my reply to the hon. Member for Bodmin (Mr. D. Marshall) on November 6th.

Sir W. Smithers: Is the right hon. Gentleman aware that, due to Government control of a specialised industry, the waste of money and good food is appalling? Is he also aware that a butcher told me last week that he was no longer a butcher but a "cutter-up" of meat for the Government, and that he would like to get his knife into the Minister of Food?

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Slaughterhouses, Cornwall

Mr. Douglas Marshall (November 13th) asked the Minister of Food the amount of square footage contained in slaughterhouses in Cornwall.

Mr. Webb: Thirty-two thousand three hundred and sixty-one square feet in those at present in use.

Mr. Marshall: Is the Minister aware that this is insufficient for present requirements? Is he also aware that construction is being hindered by his refusal to state his post-war policy. When will he state his policy?

Mr. Webb: We have to take into account all sorts of factors, including how we can resume private trading in meat and yet undertake our guarantees both to the home farmer and overseas producer. It is a very complicated programme, and until it has been worked out I would rather not speculate about the slaughterhouse programme.

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Turkeys (Importation)

Mr. Thornton-Kemsley (November 13th) asked the Minister of Agriculture what is preventing the import of turkeys from Italy and Yugoslavia, both of which countries supplied us before the war with excellent turkeys of 7 lb. to 12 lb. in weight; and what he proposes to do to enable this trade to be resumed.

Mr. G. Brown: The importation of poultry carcases from a number of countries including Italy and Yugoslavia is prohibited by the Poultry Carcases (Importation) Order, 1950, because of the risk that they would cause outbreaks of fowl pest in our own poultry flock.

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Horses (Alleged Cruelty)

Mr. Manuel (November 13th) asked the Secretary of State for the Home Department if he proposes to take any action arising from the cruelties inflicted on horses at the Coursing Club meeting at Altcar.

Mr. Ede: I do not think it would be appropriate for me to consider this matter until I have received the Report of the Committee of Enquiry into Cruelty to Wild Animals.

Tuberculosis (Human)

Mr. Braine (November 16th) asked the Minister of Health how many notifications of new cases of tuberculosis in England and Wales were recorded in 1949.

Mr. Bevan: The number of such notifications, in 1949, was 52,041.

Mr. Braine: Is that an increase or a diminution compared with last year?

Mr. Bevan: I think it is an increase. These increases are due to the fact that we are now using mass radiography. Although we are discovering more tuberculosis of a respiratory kind—the increase in the number of notifications being 5½ per cent.—there has been a decrease in the number of deaths, over the last five years, of 12½ per cent.

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Gin Traps

Sir T. Moore (Nov. 16th) asked the Minister of Agriculture if he has yet reached a decision as to whether to make the use of the gin trap illegal.

Mr. T. Williams: The gin is the most efficient trap at present available for catching rabbits and so long as this is so I would not propose to interfere with its use in those conditions where it is still legal.

Sir T. Moore: As it is universally agreed that the gin trap is a barbarous instrument which is used for trapping rabbits, would the Minister not assuage public opinion by supporting more humane traps, such as the Sawyer trap, or any other methods that are well known to him and to us for destroying rabbits?

Mr. Williams: I have told the hon. and gallant Member on several occasions that if a more efficacious trap can be made available, I shall be happy to have it examined.

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Irish Cattle (Sea Transit)

Mr. Peter Freeman (November 16th) asked the Minister of Agriculture if he will consult with the authorities in Eire with a view to arranging not to ship cattle to this country when severe gales are forecast, in view of the fact that 40 cattle died from suffocation or exhaustion due to the severe weather, during one voyage in September, and five had to be destroyed immediately upon arrival on account of their conditions.

Mr. T. Williams: I understand that the Irish regulations already provide that animals shall not be carried on any voyage if, in the judgment of the master of the vessel, there are reasonable grounds for anticipating that owing to adverse weather conditions the voyage would be attended by serious injury or suffering to, or loss of life among, the animals.

Mr. Freeman: In view of the very severe punishment which is inflicted on these animals in such a journey, and as these incidents have repeatedly occurred, would my right hon. Friend consider having these animals humanely slaughtered in Ireland before their importation into this country?

Mr. Williams: That is a matter for the authorities in Southern Ireland to consider.

UNITED NATIONS FOOD AND AGRICULTURE ORGANISATION

The Conference of the 63 member nations of the United Nations Food and Agriculture Organisation, which was held at Washington, D.C. early in November, marks the last occasion on which the Organisation will meet at Washington before its move to new headquarters in Rome, scheduled to take place early next year. Recording this, *Nature* proceeds: "In Rome two new buildings will be occupied; these are under construction by the Italian Government, and the first is expected to be ready in February and the second in October. Mr. N. E. Dodd, the Director-General of the Food and Agriculture Organisation, has stated that with the disruption of activities caused by the move and owing to the fact that a large proportion of the staff (about 80 per cent. of the lower-salaried staff and 40 per cent. of the higher grades) will not be going to Rome, the work of the Organisation will be severely hampered during the first half of 1951 at least. The Conference at Washington, unlike the previous annual sessions, is a special one, limited to the essential financial and administrative matters and other urgent questions which may arise. This new departure was decided on at the 1949 Conference when, in addition to the resolution for the transfer of the headquarters to Rome, the principle of biennial, rather than annual, conference sessions was also adopted; under this system a full-scale conference is not to be held until the autumn of 1951."

NOTES AND NEWS

Diary of Events

Nov. 28th.—Meeting of the East Midlands Division, N.V.M.A., at Sutton Bonington, 2.15 p.m.

Nov. 29th.—Annual General Meeting of the Scottish Branch, N.V.M.A., in the Royal (Dick) Veterinary College, Edinburgh, 2.15 p.m.

Nov. 30th.—Joint Meeting of the Sussex Division, N.V.M.A., with the Brighton Division of the British Medical Association, at Hove (Dudley Hotel, Lansdown Road), 8 p.m.

Nov. 30th—Dec. 1st.—R.C.V.S. Membership Written Examinations.

Dec. 3rd.—Meeting of the South-Eastern Division, N.V.M.A., at Maidstone (Royal Star Hotel), 2.30 p.m.

Dec. 4th.—R.C.V.S. Membership Examinations: Orals and Practicals commence.

Dec. 13th.—Meeting of the Editorial Executive Committee, N.V.M.A., 1.30 p.m.; Editorial Committee, 3 p.m.

Jan. 10th, 11th, 12th, 1951.—Meetings of Committees and Council, R.C.V.S.

QUARTERLY MEETINGS OF COUNCIL AND STANDING COMMITTEES DURING 1951

The following dates have been fixed for meetings next year, chiefly to give members plenty of time to reserve hotel accommodation

In London

Monday, January 22nd:
2.30 p.m. Parliamentary and Public Relations Committee.
3.30 p.m. Veterinary State Medicine Committee.
Tuesday, January 23rd:
10 a.m. Home Appointments Committee.
11.30 a.m. Organising Committee.
2.15 p.m. General Purposes and Finance Committee.
Wednesday, January 24th:
11 a.m. Council.

In London

Monday, April 16th:
2 p.m. Organising Committee.
4 p.m. Parliamentary and Public Relations Committee.
Tuesday, April 17th:
10 a.m. Veterinary State Medicine Committee.
12 noon Home Appointments Committee.
2.15 p.m. General Purposes and Finance Committee.
Wednesday, April 18th:
11 a.m. Council.

In Edinburgh

Wednesday, July 11th:
11 a.m. Home Appointments Committee.
2 p.m. Organising Committee.
4 p.m. Parliamentary and Public Relations Committee.
Thursday, July 12th:
11 a.m. Veterinary State Medicine Committee.
2 p.m. General Purposes and Finance Committee.
Friday, July 13th:
11 a.m. Council.

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N.V.M.A. Handbook on the Handling of Animals and First Aid

The Association has now printed, as its publication No. 20, a Handbook on the Handling of Animals and First Aid. One copy will be available to each member of the Association, free of charge, on application to the General Secretary. Copies also will be available for general purchase, at the price of 5s. per copy, on application to 36, Gordon Square, London, W.C.1.

The Handbook has been prepared by the N.V.M.A. in response to requests from various organisations seeking guidance from the veterinary profession in arranging short courses of training for young people in the application of first aid to animals which have been injured or taken ill suddenly.

It is a publication of 172 pages, with 31 figures and three plates, and the subjects dealt with in the two parts are as follows:—

Part I: Outline of first aid; approach, handling and control.

Part II: General principles of first aid; structure and functions of the body; the skeleton; fractures; the joints; the tissues; dressings and bandages; blood and circulation; haemorrhage; wounds; burns and scalds; the nervous system; loss of consciousness; the trunk and its contents; the lymphatic system; the uro-genital system; the respiratory system; the eye and ear; poisoning; transport of injured animals.

XUM

REQUEST FOR VETERINARY SERVICES FROM THE ISLAND OF SARK

Our co-operation has been sought by La Dame de Serk, on behalf of farmers on the Island, in meeting the need for veterinary services there. The Island carries some 200 head of cattle, with horses and pigs and a number of small animals. It may interest some member of the profession who would normally be retiring, to settle down in Sark and give whatever veterinary attention is required. Advantages are that he would be free of taxation and that the Island enjoys a mild climate. Enquiries should be addressed to La Dame de Serk, Sark, *via* Guernsey.

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PERSONAL

Births.—ARNOLD.—On September 27th, 1950, to Prudence, wife of Roger Arnold, Acting Deputy Director of Agriculture, Veterinary Services, Jamaica, a daughter, Gillian Margaret.

WILDE.—To Kathleen, wife of J. K. H. Wilde, of the Veterinary Department, Mpwapwa, Tanganyika, at Kongwa Hospital, Peter, a brother for James.

. . . . .

Marriage.—HENDERSON—HAWKINS.—On Saturday, September 9th, 1950, at St. Andrews, Curry Rivel, Taunton, Joan Fraser Henderson, M.R.C.V.S., eldest son of Mrs. V. M. Henderson, of Merton Park, London, S.W.19, to Mary, only daughter of Mr. and Mrs. A. L. Hawkins, of Middlethorpe House, Curry Rivel, Taunton, Somerset.

TOBIN—LAMBOURN.— On October 7th, 1950, at St. James's, Reading, William Tobin, M.R.C.V.S., son of the late Mr. Tobin and of Mrs. Tobin, Whiddy, Bantry, Co. Cork, to Betty Thompson, daughter of Mr. and Mrs. Lambourn, "Highfield," Elmhurst Road, Reading, Berks.

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R.C.V.S. OBITUARY

McCHLERY, Alexander Scrymgeour, Assistant Director of Veterinary Services (Field), Southern Rhodesia. Graduated Edinburgh, July 16th, 1929. Died September 12th, 1950; aged 44 years.

MR. ALEXANDER S. McCHLERY, M.R.C.V.S.

It is with much regret that we learn of Mr. McChlery's death in Johannesburg Hospital on September 12th. A Southern Rhodesian, he received his education at the High School, Salisbury, S.R. Having qualified at the Royal (Dick) Veterinary College in 1929 he joined the Southern Rhodesian Veterinary Service.

Mr. McChlery was District Veterinary Surgeon, Bulawayo, for some years and in the course of his services acquired great experience of animal diseases and their control in Southern Rhodesia as a whole. In 1938 he was one of a team of veterinary officers from African territories deputed to conduct an inoculation campaign against rinderpest in Tanganyika as a protective measure against the spread of that disease to the Southern territories of Africa. He also conducted a rinderpest survey of game in the Luangwa Valley of Northern Rhodesia. On the outbreak of foot-and-mouth disease in Bechuanaland he assisted with the control measures there and also conducted a foot-and-mouth disease survey on the Bechuanaland-Southern Rhodesia border.

Mr. McChlery, who was last in this country a couple of years ago, was very highly esteemed in Southern Rhodesia. Appreciative notices of his work have appeared in the lay press of the territories of that part of Africa. The sympathy of his colleagues is extended to his wife and family in their sad loss, while all will deplore the death of a veterinarian of such promise at so early an age.

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the N.V.M.A.

TORSION OF THE LIVER IN SOWS

Sir,—The recording by M. R. W. Lewis of a case of torsion of the liver in a sow is of interest, and raises the point as to why this affection is only very rarely observed in routine examination of pigs slaughtered for human consumption. In the case described by Lewis the animal was a sow suckling her three weeks' old litter, and *post-mortem* examination showed that the left lateral and left central lobes of the liver had undergone torsion through 180° and had ruptured, death presumably being due to internal haemorrhage.

An interesting article by P. Emsbo, which appeared in *Maanedsskr. Drylaeger*, 52, 1940, states that cases of torsion of the left lateral lobe of the liver occur relatively often in older sows, sometimes accompanied by atrophy or necrosis of the lobe and sometimes causing death due to rupture of the lobe and internal haemorrhage. Over a period of 15 months Emsbo autopsied 99 sows which had died from various disorders, and in nine of these death was attributed to haemorrhage due to torsion of the left lateral lobe. In seven out of the nine cases the sow was suckling a litter when it became suddenly ill, death occurring in from 12 to 48 hours after onset of symptoms. *Post-mortem* lesions in the seven cases included the presence of 4 to 9 litres of blood in the abdominal cavity and torsion of the left lateral lobe through 180° to 360°, the affected lobe being much enlarged below the seat of torsion. The theory is advanced that alteration in the shape of the liver, which generally occurs in older sows, predisposes the left lateral lobe to torsion, and it is suggested that in sows suckling a litter the movements of the sow lying on its right side may be a further predisposing factor to the liver torsion.

Emsbo states that torsion of the left lateral lobe of the liver in pigs is thought to occur as frequently as torsion of the spleen but is more often fatal. Torsion of the spleen is quite frequently encountered in older pigs during routine slaughterhouse examination, and in the cases the writer has observed there have been no deleterious effects on the marketability of the carcases. It would therefore appear that the reason for the relative rarity of cases of liver torsion in pigs slaughtered for human consumption, as compared with cases of splenic torsion, is related to the fact that the liver affection is of a very acute nature and is very often fatal. *Post-mortem* examination of sows dying suddenly while suckling a litter may elicit the fact that liver torsion in pigs is, as Emsbo suggests, as common as torsion of the spleen.

Yours faithfully,

Veterinary Department, H. THORNTON
Town Hall,
Newcastle-upon-Tyne, 1.
October 26th, 1950.

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VETERINARY INSPECTION AT DOG SHOWS

Sir,—In view of the widespread and persistent criticism which has pervaded the canine Press for some time past regarding veterinary inspection at dog shows I propose in future to decline all invitations to join the veterinary panel at any show other than those sponsored by two specialist breed clubs with whose officers I have for some years, enjoyed a pleasant relationship of mutual confidence and consideration; to withdraw my services from these clubs would be ungracious indeed. I shall also honour obligations already undertaken.

Constant adverse comment such as that which has appeared recently in the canine Press would, in any other sphere of activity, be virtually a vote of "no confidence," the logical reaction to which is the resignation of the person, or body of persons concerned, hence my decision.

It may well be that very many of the veterinary surgeons who regularly give their services to dog show executives have not the opportunity of seeing the canine Press and hence are in ignorance of the odium apparently attaching to this professional service in the minds of the dog fancy.

I am aware that the action of an individual is of little consequence in circumstances such as these, but my step will be fully justified if it serves to focus the attention of my profession on the way the post-war dog fancy is only too ready not merely to look—but to scrutinise very critically—a gift horse in the mouth. Perhaps a period during which dog shows were held without any veterinary service being available might be a salutary experience?

May I anticipate the criticism that I do not see the exhibitor's point of view by pointing out that I have had a fairly extensive experience as an exhibitor at every type of dog show since 1928.

Copies of this letter have been submitted to:—

Mr. S. F. J. Hodgman, M.R.C.V.S., Hon. Veterinary Surgeon to the Kennel Club.

Mr. F. H. Stainton, F.R.C.V.S., Organiser of the Veterinary Services at most of the major London Shows.

The Editor *Our Dogs*.

The Editor *Dog World*.

Yours faithfully,

78, Brentway. JOAN O. JOSHUA.
Finchley, N.3.
November 1st, 1950.